



# RAMSAY'S CATALOGUE

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A FILING SYSTEM OF MANUFACTURERS' CATALOGUES AND TECHNICAL BULLETINS DESIGNED FOR ARCHITECTS, ENGINEERS, AND SUCH OTHER PERSONS WHOSE PRACTICE IT IS TO SELECT, SPECIFY OR USE BUILDING MATERIALS AND EQUIPMENT.

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#### Screens

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#### Concrete and Glass Construction

Plimmer, B. G., & Co. Pty. Ltd. 28/1
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Bronze Window Frame Co. Pty. Ltd.	Pty.	19/4
Combs, J. Pty. Ltd.		19/4
Crittall Mfg. (Aust.) Pty. Ltd.	Ltd	19/7
Dowell, C. & Sons Pty. Ltd.		19/6
Gambel & Meier Pty. Ltd.		19/8
K-M Steel Products Ltd.		13/3
Marshall Charles, Pty Ltd.		28/1
Wunderlich Ltd.		19/6
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### Wires and Cables

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#### Devices

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### Wrought Iron Work

See Ornamental Metalwork

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## PREFACE

THE First Post-War (1947) Edition has been produced during one of the most difficult periods yet experienced by industry in this country. Owing to the many problems which have affected the printing industry during the production of this volume and which were unpredictable at the commencement of compilation, the date of issue is much later than was originally planned. There appears to be no possibility of publishing another edition before June, 1949, and this Edition will therefore be current until that date.

In spite of prevailing conditions, this edition of "Ramsay's" is most comprehensive, but, due to so much uncertainty at the present time, allowances should be made for what may appear to be incomplete details of the products of certain manufacturers.

We take pride in acknowledging the continued wide support we have received, especially from those manufacturers and suppliers who have made this edition such an excellent post-war production.

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SECTION

**1**

SECTION

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CATALOGUES 1 to 6

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The Department of Architecture and Building at the Melbourne Technical College offers courses which are designed to provide a full professional education for all who intend to practise as Architects, Master Builders or Interior Decoration Consultants. The training is taken in an atmosphere of liberal studies along with students undertaking courses for other professions.

The training is planned to develop the student to become as efficient as possible in the vocation he

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#### FELLOWSHIP DIPLOMA OF ARCHITECTURE

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**Entrance Standard:** Applicants with University Intermediate Certificate or Technical Intermediate Certificate (Higher Level) may be admitted, but they will be required to do two years post-intermediate study and obtain a pass in set Senior Technical Subjects before entering the course proper.

Applicants from Public and Secondary Schools with University Matriculation will be admitted, though they may be required to do one or two prescribed subjects in the First Year.

Before the Diploma can be awarded to them, the students must obtain not less than two years' full-time practical experience with an approved architectural firm or firms.

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Students from Public and Secondary Schools require Leaving Certificate to attain Entrance Standard.

The Course is for a Certificate in Architectural Draughtsmanship, and covers a period of three years full day tuition. Before the Certificate can be awarded to him, the student must obtain one year's full-time practical experience with an approved architectural firm or firms.

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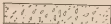
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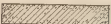
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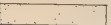
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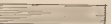
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SOLID SECTIONS AT SMALL SCALE



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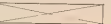
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CONSTRUCTIONAL  
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Similarly, development in design has been made by overseas manufacturers and improved types of surveying and drafting instruments are now coming on the market again. The modern trend of design of survey instruments is towards compactness and weather resistance by totally enclosing and sealing optical systems, circles, etc. The use of glass circles and optical methods of reading has now come to the fore, and Messrs E. R. Watts Ltd., London, have several models of Optical Reading Theodolites and Levels available. Esdaile's welcome enquiries for the following instruments and apparatus:

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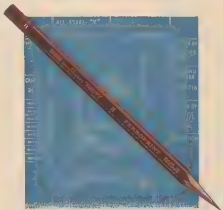
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RAMSAY'S CATALOGUE



# CEMENT

SECTION

2

SECTION

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CEMENT DATA SHEET

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# CEMENT DATA

COMPILED BY THE TECHNICAL STAFF OF RAMSAY'S CATALOGUE  
FROM INFORMATION SUBMITTED BY THE MATERIAL SUPPLIERS.

2

## PROPORTIONS and QUANTITIES BY VOLUME IN CEMENT MIXES

### CONCRETE

Grade	Cement Cubic Ft.	Aggregate		Water		Yield in Cubic Ft. ‡	Cement in 1 cu. yd.
		Fine Cubic Ft.	Coarse Cubic Ft.	Min. † Gallons	Max. † Gallons		
A*	1	1	2	3	7	2.7	8000
B*	1	1.5	2	4.5	6.5	3.5	2600
C*	1	2	4	4.5	6.5	4.5	2200
D*	1	2.5	5	5	7	5.5	1700
	1	3	5	5	7	5.9	
	1	3	6	6	7	6.6	

Heavy duty floor surfaces, this, heavily reinforced slabs.  
High structural strength concrete, thin reinforced walls.  
Specification concrete, i.e., beams, slabs, floors, etc.  
Strong foundations, lean mix roads, machine foundations, retaining walls.  
Large mass concrete, large engine bases.  
Unimportant masses for heavy walls, large foundations, supporting stationary loads.

### PLASTER

Cement Cubic Ft.	Sand	Water		Yield †	Uses
		Min. † Gallons	Max. † Gallons		
1	2	4.5	4	2.2	Water-tight Plaster coats for Cellars and Tanks.
1	2.5	3.5	4.5	2.4	Surfacing for Paths, Tennis Courts, etc.
1	3	4.5	5	2.9	Wall ornaments, Roughcast, Stucco.
1†	4	5.6	5	3.7	Mortar for Bricks and Ashlar Stonework.
1	5	6	6.5	4.5	Building Blocks and Bricks (will not resist damp).

\* From the Uniform Building Regulations, Victoria, 1946

† To which may be added 1 to 1 1/2 part of Hydrated Lime

‡ After 28 days curing See S.A.A. No. C.A.2-1937

† Depends upon the percentage of voids and dampness of aggregate.

### USEFUL FACTS

One paper bag of cement is one cubic foot and weighs 94 pounds. 24 bags to 1 ton.

One Imperial gallon of water weighs 10 pounds and one cubic foot weighs 62 1/2 pounds.

On the average, slightly damp sand weighs 80 pounds, coarse aggregate 88 pounds, per cubic foot.

These figures are results of practical mixtures under average conditions.

### FOR FURTHER INFORMATION SEE

The Standards Association of Australia Code for Concrete in Building, No. C.A.2-1937.

The Uniform Building Regulations, Victoria-1945.

**LIME**

SECTION

**3**

SECTION

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David Mitchell Estate Catalogue

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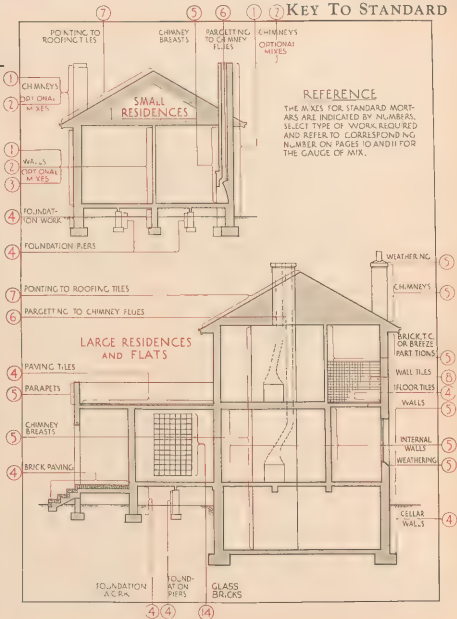
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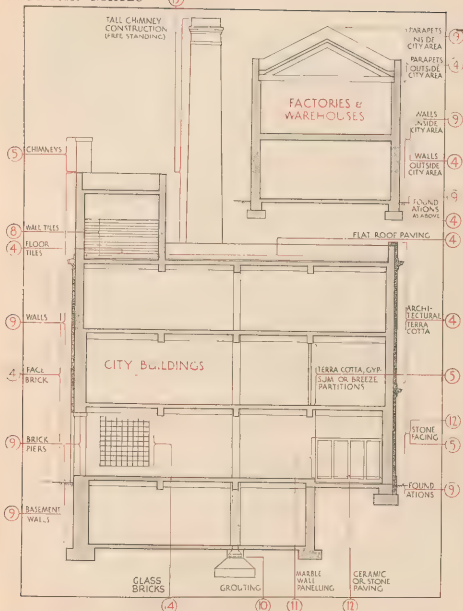
## KEY TO STANDARD



# MORTAR MIXES

(13)

3



DAVID M. J. DEE, ESQ.

## STANDARD MORTAR SPECIFICATIONS

3

### Gauges or Mixes

(All proportions by volume).

1. Three (3) parts of sand and one (1) part of "Limal."
2. Three (3) parts of sand, one (1) part of "Limal" plus ten per cent. (10%) of cement.
3. Four (4) parts of sand, one (1) part of "Limal" plus ten per cent. (10%) of cement.
4. Six (6) parts of sand, one (1) part of "Limal" and one (1) part of cement.

#### *Pointing Mortar for Face Brick and Coloured Floor Tiles—*

Use the same mix as the above "with the addition of sufficient colour to produce an approved colour joint."

#### *Pointing Architectural Terra-Cotta with Caulking Compound—*

Use a standard brand of caulking compound tinted to match or as selected.

5. Nine (9) parts of sand, two (2) parts of "Limal" and one (1) part of cement.

*The above mix is also used for setting Sandstone, Blue-stone, Freestone, and Limestone.*

6. Three (3) parts of sand and one (1) part of "Limal."
7. Nine (9) parts of sand, two (2) parts of cement, and one (1) part of "Limal" plus sufficient colour to produce an approved colour joint.

8. Six (6) parts of sand, two (2) parts of cement and one (1) part of "Limal."

#### *Pointing Mortar for Coloured Wall Tiles—*

Use the same mix as the above "with the addition of sufficient colour to produce an approved colour joint."

#### *Pointing Mortar for White Wall Tiles—*

One (1) part of clean fine white sand, one (1) part of white Portland cement, plus ten per cent. (10%) of "Limal."

9. Nine (9) parts of sand, two (2) parts of cement, and one (1) part of "Limal."

*(approved by Melb. City Council, May 20, 1928)*

10. Two (2) parts of sand, one (1) part of cement, plus ten per cent. (10%) of "Limal."

11. Nine (9) parts of sand, three (3) parts of cement and one (1) part of "Limal."

#### *Pointing Mortar for Light Coloured Marbles—*

*(See under par. 8).*

12. *(For setting granite)*—Nine (9) parts of sand, two (2) parts of cement and one (1) part of "Limal."

#### *Pointing with Caulking Compound—*

Use a standard brand of caulking compound, tinted to match or as selected.

13. Five (5) parts of sand, two (2) parts of "Limal" and one (1) part of cement.

14. Two and a half (2½) parts of clean sand, one (1) part of cement and one-quarter of one (1) part of "Limal."

*(Note.—Manufacturers' recommendations)*

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**STONE AND  
MARBLE**

SECTION

**4**

SECTION

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CATALOGUES 1 and 2

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# ARCHITECTURAL STONE

4

I

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## ADAPTABILITY

Architectural Stone readily lends itself to the moulding of intricate shapes and ornamental details that may be used in the form of trim in conjunction with brickwork or for the entire facade of buildings. Where required, variations in colour may be produced by using various coloured aggregates and cements.

In addition to its use for building purposes, Architectural Stone is a most popular material for the reproduction of ornamental garden furniture such as Fountains, Garden Seats, Sundials, etc., which have a pleasing appearance when produced in this material.

## MANUFACTURE, etc.

A feature of the process of manufacture is that the facing of the stone is cast integrally with the backing, besides selected natural stone aggregate crushed to a suitable size and mixed with coloured cements permit the reproduction in texture and colour of almost any natural stone. Draggled, tooled and axed finishes may be obtained by casting in specially made moulds.



Beyond the limitations of transportation and easy handling, there is no limit regarding size in which precast stone can be made for structural building purposes. Furthermore, lifting rings, bolts, bars, anchors, etc., can be embedded while casting, to facilitate lifting and building-in, etc.

## COMPARATIVE COST

Apart from the considerable saving effected when precast Architectural Stone is used in lieu of natural stone, even greater savings can be made when repetition work, particularly mouldings and ornamental work, is required. Savings from 25 per cent to 50 per cent may be made where many uniform blocks of similar shape and ornament are required.



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# STONE

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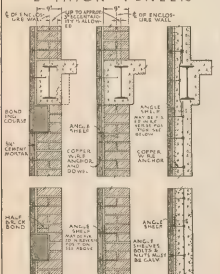
## COMMERCIAL BUILDING STONES QUARRIED AND SUPPLIED BY STANDARD QUARRIES

Name and Uses	Colour and Grain	Description	Min. Thickness
<b>Victoria</b>			
<b>STAWELL</b> (FREESTONE) For Office and Commercial Buildings, Banks and Public Buildings, Ecclesiastical Buildings, Monuments, Paving. Can be readily carved.	Ivory— Deep Ivory— Variegated and exceptionally fine grained.	"Stawell stone has excellent weathering properties, as shown by its low absorption, great resistance to corrosion by carbon-dioxide and to the action of mineral acids. It has very high crushing strength and chemically the stone is very stable and microscopically appears almost the ideal weathering sandstone."—Henry C. Richards, M.Sc.	Rubbed Face . 2in. Sawn Face . 2in. Rock Face . 6in.
<b>GRANITES</b> For buildings of a monumental character and heavy work in public and commercial buildings.	Casterton red. Wangaratta pink and buff. Harcourt grey. Dromana green.	Granite has exceptional strength and durability, is practically non-absorbent, and indefinitely withstands exposure to climate and weather. It is available in a wide range of colours and texture and has infinite beauty and character, to be found in few other materials. It may be cut into any form desired, and dressed in a great variety of finishes. It takes a high and durable polish which will withstand long exposure to the weather.	Polished Face . 2in. Shot Face . 2in. Exfoliated Face . 2in. Rock Face . 6in.
<b>FOOTSCRAY BASALT</b> (BLUESTONE) Bridge and Masonry construction—door sills and stairways. Also used where severe architectural treatment is desired.	Dark grey, compact and homogeneous.	Bluestone is a hard, dense basalt (dark grey in colour, with an open-textured face) and may be used for dimension stone. It is extensively quarried at Footscray, and in a crushed form is used for road metal, aggregate for concrete, etc.	Rubbed Face . 3in. Sawn Face . 3in. Rock Face . 6in.
<b>South Australia</b>			
<b>WAKERIE</b> (FREESTONE) For buildings generally.	Buff to cream. Fine grain.	A sandy limestone containing small angular crystals of quartz. H. B. Meuser, M.Sc., of the Melbourne University, conducted a test of which he writes:—"The stone tested very well and you should be gratified with the results."	Rubbed Face . 4in. Sawn Face . 4in. Rock Face . 6in.
<b>MURRAY BRIDGE</b> (FREESTONE) For buildings generally.	Buff, very fine grain.	Murray Bridge Freestone is of fine texture and hard. Adelaide's leading geologist comments: "Many varieties of this stone are used for buildings in this State, but this specimen, with its strength and density, should be stronger and more durable than any in common use."—(Signed) C. T. Madigan, 18/7/38.	Rubbed Face . 4in. Sawn Face . 4in. Rock Face . 6in.
<b>GRANITES</b> For buildings of a monumental character and heavy work in public and commercial buildings.	Murray Valley black. Murray Bridge light red	Similar in colour and texture to the world-famous Ben Accord Black Granite from Russia. Light red in colour, hard, and will take an excellent polish.	Polished Face . 2in. Shot Face . 2in. Exfoliated Face . 2in. Rock Face . 6in.
Supplied by Standard Quarries in Victoria & S.A.			
<b>SYDNEY FREESTONE</b> For buildings generally as well suited for moulded and carved work if of good quality.	Yellow. Yellow and of even texture. White and medium grained.	"A durable sandstone of even texture which turns yellow on exposure. Under the microscope a sample of this stone shows the grains to be clear and sharp, and the whole mass appears as bright and lustrous."—J. Nangle. A sandstone of medium texture. One of the softer sandstones and used extensively in superstructures of commercial buildings.	Rubbed Face . 2½in. Sawn Face 3½in. Rock Face . 7in.

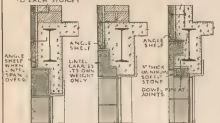


CURRENT METHODS OF FIXING STONE FACINGS TO ENCLOSURE WALLS,  
AS RECOMMENDED BY STANDARD QUARRIES PTY. LTD.

## 2" THICK VENEER

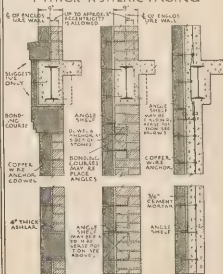


**BONDED** **ANGLE SHELF SUPPORTS**  
2 BONDING COURSES **2 ANGLE SHELVES TO EACH STOREY**

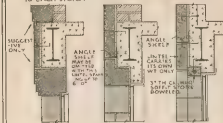


TYPICAL WINDOW HEADS  
INTERCHANGEABLE

4" THICK ASHLAR FACING



**BONDED**  
2 BOND NG COURSES  
TO EACH STORY



THESE 2 HEADS INTERCHANGABLE  
TYPICAL WINDOW HEADS

• ENCLOSURE WALLS: NON-LOAD BEARING WALLS FILLING THE PANELS FORMED BY BEAMS AND COLUMNS IN STEEL FRAME AND REINFORCED CONCRETE CONSTRUCTION.

**LOAD BEARING WALLS (ORDINARY CONSTRUCTION):** WALL THICKNESSES AS PRESCRIBED FOR BY BUILDING REGULATIONS ARE EXCLUSIVE OF ALL 2" STONE VENEERS AND THE 4" THICK ASHLAR FACINGS WHICH ARE NOT CONSTRUCTED TO BOND IN WALL BRICK THICKNESSES IN TWO SUCH BONDING COURSES TO EACH STOREY.

60,000 LBS  
SOFT COPPER  
WIRE AND CABLE  
RECOMMENDED

WIRE ANCHOR  
VERTICAL DOWEL

SIDES OF ADJACENT STONES DOWELED AND ANCHORED TO WALL.

### 3 METHODS of ANCHOR- ING STONES

Diagram illustrating four types of external corners:

- BUTT
- RUST
- QUOIN
- UNECONOMICAL (NOT RECOMMENDED)

EXTERNAL CORNERS

TYPICAL SIL. JAMB PLAN 4

IN GENERAL, THE ABOVE METHODS ARE APPROVED BY THE MELBOURNE AND ADELAIDE CITY COUNCILS

## STONE FINISHES

4

Picked Face finish consists of a multitude of stabs with a hammer sharpened like a punch, and is used after the punch.

2

Exfoliated Face is similar in appearance to Picked Face, but shows no tool marks, and is performed by subjecting the stone to a thin pencil point of beat. This is a patented process of the Standard Quarries.

Reek Faced Finish, as the name implies, is a natural finish; no labour is done to the face other than pitching it to a level line at beds and joints.

A Diamond-hammer finish is produced with a hammer with a number of pyramid points on each end, and gives a finer face than the "Pick."

A Vermiculated Finish is made with drills, chisels and punches, and follows the single axe.

Polished Face is a process in granite or trachyte whereby all the surfaces are reduced to a very fine finish by the use of such abrasives as steel shot, carborundum grains, flour of emery, and is polished by oxides of tin, called putty powder, being rubbed on the face by heavy pressure felt.

Sandstone is principally dressed by machines.

Shot Sawn Face is obtained as a result of sawing in a gang saw with chilled steel shot.

Machine Rubbed Face is a finish that is imparted by high-speed carborundum machines and is strongly recommended for freestone as it "closes up" the face.

Rubbed Face is a finish which is performed by rubbing out all tool marks with abrasives.

Batted Face is performed after the face is rubbed by striking a bladed chisel 3in. to 4in. wide with a light mallet. This finish is usually specified so many bats to the inch.

Tooled Face is somewhat similar to batted face, but the marks are more regular and deeper, and are usually specified "three bats to the inch."

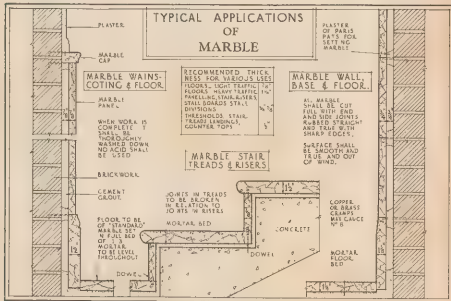
Broached Face is a finish where a series of punched lines on parallel are sunk to the marginal drafts.

Limestones such as Omahu from New Zealand, Waurn Ponds, and Ripstone Limestones, are cut with saws and chisels somewhat similar to those used by a carpenter. The face is usually finished with the teeth marks of a small saw called a "Drag." Sometimes the face is left Rock faced.

## MARBLE

Ample stocks of Australian and imported marbles are available for large contracts. Our marble finishing plant is equipped and manned to produce the best class of workmanship, and for this reason we are in the position

to maintain a continuous operation from the raw material through the many works' operations to fixing complete on the job.



Further information and preliminary estimates of cost will gladly be given to architects, engineers and others interested in the use of granite, freestone and marble.

# STANDARD QUARRIES PTY. LTD.

MELBOURNE: MW1221

ADELAIDE: F6103

HAWKES &amp; CATALOGUE



# BRICK VENEER CONSTRUCTION

# BRICK VENEER CONSTRUCTION

## Ideal for Australian Domestic Architecture

SINCE ITS INTRODUCTION TO AUSTRALIA IN 1936, BRICK VENEER CONSTRUCTION HAS RECEIVED THE CONTINUAL AND INCREASING APPROVAL OF THE BUILDING INDUSTRY. PROOF OF THIS, AND THE FACT THAT BRICK VENEER CONSTRUCTION IS SUITABLE FOR AUSTRALIAN CONDITIONS, IS EMPHASISED BY THE GRAPH ON THIS PAGE SHOWING ITS GROWING POPULARITY.

### WHAT IS IT?

Brick Veneer Construction combines the advantages of all-timber and all-brick construction, yet preserving the characteristic appearance of the brick house. Consisting of a fabricated timber framework, protected externally with a Brick Veneer wall 4½ inches thick, it cannot be distinguished from an all-brick house, yet it provides the following additional and important advantages.

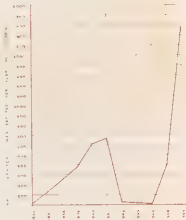
### APPEARANCE.

Its internal appearance, especially when finished with streamlined, joint-free, Fibrous Plaster sheets, cannot be distinguished from a solid brick house, as the Fibrous Plaster may be decorated to suit all tastes with sand, texture, flat paint or kalsomine finishes.

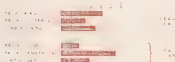
### ECONOMY.

Reliable reports from Architects and Builders indicate that the relative cost of Brick Veneer Construction for residential work compared to other types of construction is as follows:—

- All-Brick Construction . . . . 100 per cent.
- Brick Veneer Construction . . 87-90 per cent.
- Timber Construction . . . . . 80 per cent.



GRAPHS SHOWING INCREASING POPULARITY OF BRICK VENEER CONSTRUCTION



THE VERSATILITY AND POPULARITY OF BRICK VENEER CONSTRUCTION IS EMPHASISED BY THE ABOVE ILLUSTRATION OF A STREET OF BRICK VENEER HOMES, NORTH BALWYN, VICTORIA

# INDISTINGUISHABLE FROM SOLID BRICK HOMES WHEN FINISHED WITH FIBROUS PLASTER

INTERIOR AND EXTERIOR VIEWS  
OF A DELIGHTFUL BRICK VENEER  
HOME DESIGNED BY H. W. & F. B.  
TOMPKINS, EMPHASISE THE AC-  
CURACY OF THE ABOVE STATE  
MENT.



## ADAPTABILITY TO CLIMATIC CONDITIONS.

Brick Veneer Homes are cool in summer and warm in winter, because their construction combines the advantages of both all-brick and timber construction. Tests by the Commonwealth Experimental Building Station indicate that the addition of a two-inch thickness of Mineral Wool insulation in the walls and on the ceiling of a Brick Veneer House make it the perfect house for Australian climatic conditions all the year through.

## MAINTENANCE.

Maintenance of Brick Veneer homes is confined to painting external joinery and trim, as external walls are of brick or stucco.

## INTERIOR FINISH.

The interior of a typical Brick Veneer home is illustrated below, its clean, smooth, streamlined walls and ceilings of Fibrous Plaster relieved with a small decorative cornice typifies the style of interior finish demanded by home-builders today.

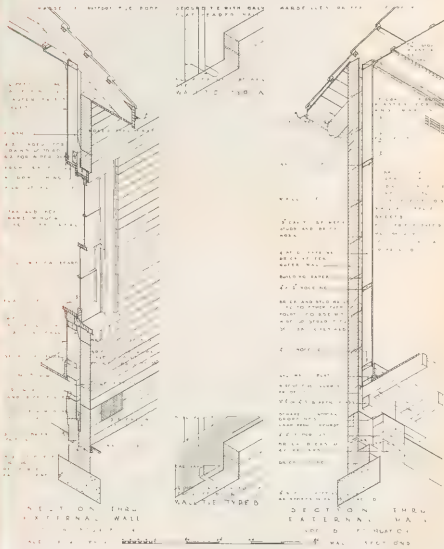
Fibrous Plaster is the obvious choice of discriminating owners to day, because it can be invisibly jointed, thereby eliminating unsightly dust-collecting cover moulds, etc.

## BRICK VENEER MAY BE BUILT ANYWHERE.

The Uniform Building By-Laws of Victoria and the New South Wales Building Ordinances No. 70 and No. 71 permit the erection of Brick Veneer Construction anywhere in the State—even in previously defined all-brick areas.



5  
1  
BRICK  
VENEER



# SPECIFICATION for BRICK VENEER CONSTRUCTION

5

THE FOLLOWING SPECIFICATIONS PRESENT ONLY THOSE PARAGRAPHS DIRECTLY APPLICABLE TO BRICK VENEER CONSTRUCTION, AND ARE INTENDED AS A GUIDE TO THOSE UNFAMILIAR WITH THIS TYPE OF CONSTRUCTION. IN ORDER THAT LOCAL BUILDING BY LAWS MAY NOT BE CONTRAVENED, IT IS SUGGESTED THAT THE FOLLOWING PARAGRAPH BE INCORPORATED IN THE SPECIFICATION.—

## GENERAL.

The Contractor shall comply with all By-laws and Regulations of authorities having jurisdiction over the Works, where they go beyond or conflict with the provisions of this specification.

EXCAVATION	
CONCRETE	
BRICKS	To follow standard practice of architect.
MORTAR	
DAMP-PROOF COURSE	
LINELS	

## ANCHOR TIES.

Anchor for tying brickwork to wood framing are to be of:

- Where waterproof lining is specified, 8 inch lengths of 20 gauge 14 in. galvanised hoop iron strapping, bent and nailed to each stud as indicated on the detail Type B, at the heights to be later specified.
- Where no waterproof lining is used, special No. 8 gauge galvanised wire ties with ends bent to form eyes and double nailed to each stud as the brickwork is carried up, or when completed, as detail Type A.

## FOUNDATION BRICKWORK.

Foundation brickwork laid in mortar as previously specified is to be built up in 8 in. thickness:

For continuous foundation walls—Type A:

- to the underside of plate level, provision being made for the reception of bearers on adjacent walls.

For pier construction—Type B:

- For two courses, then breaking back to 4½ in. work with 9 in. piers spaced not more than 4 ft. 0 in. apart; piers to be carried up to the underside of bearer plate level.

## VENEER WALL.

After framing (and linings) are completed, continue up the brickwork on 4½ in. single thickness work in similar mortar as above to the eaves soffit, providing at all times a clear cavity of at least 1½ in. between inside face and studs (or waterproof lining).

At every fourth course (or 13½ in.) and as later specified, tie the veneer wall to the timber framing by means of the—

- Anchor,
- Galvanised ties,

embedded at least 3 in. into joints.

## AIR VENTS.

Galvanised wire air vents to be spaced at 10 ft. 0 in. centres to ventilate below floor level.

All courses shall be laid in a full bed of mortar and, irrespective of the finish to the joints on the external face, the joints on inside face of brickwork shall be rough struck to ensure a clean face in the cavity; clean up and remove all mortar droppings.

## BUILDING PAPER.

Waterproof linings are to be a waterproofed building paper reinforced with sisal hemp

## TIES.

Where no waterproof lining is used, secure veneer brickwork to framing on completion by nailing each tie to the studs.

## WATERPROOF LININGS.

After framing is in position and before veneer brickwork is commenced, line the whole of the outside face of the studs with the building paper previously specified, in horizontal layers with joints lapped downwards and at ends at least 2 in.; secure well until anchors are fixed.

## ANCHORS.

To each stud and at heights previously specified, nail and bend the anchors.

## WALL PLATES.

Plates for supporting floor joists at wall are to be of—

Where continuous 9 in. footings occur:

- 3 in. x 1½ in. Jarrah, Red Gum or Iron Bark, well bedded down on footings

For pier construction:

- 5 in. x 3 in. or 4 in. x 3 in. hardwood, carried continuously across piers; maximum space to be 4 ft. 0 in.

## GROUND FLOOR CONSTRUCTION.

Stumps, bearers and joists as usual.

## FRAMING TIMBERS.

All timbers shall be dry and straight and free from sap, shakes, large, loose or dead knots. All timbers shall be sawn die square and hold the full scantling specified, and shall be of—

- Hardwood,
- Oregon Pine,
- Cypress Pine.

## WALL FRAMING.

Shall be framed from the following timber:—

- 4 in. x 2 in. or 4 in. x 3 in. top and bottom plates.
- 4 in. x 1½ in. or 4 in. x 2 in. studs at 18 in. centres (4 in. x 2 in. studs for two storey work).
- 3 in. x 1 in. diagonal bracing let into studs.
- 4 in. x 2 in. or 4 in. x 3 in. trimmers (4 in. x 3 in. trimmers for two storey work).
- 6 in. x 3 in. ribbon cut into studs to support first floor joists for two storey work.
- 4 in. x 1½ in. nogging fixed at skirting height at 8 ft. 0 in. from floor level and 6 ft. 8 in. from floor level.

## FIRST FLOOR CONSTRUCTION.

Joists shall be 11 in. x 1½ in. or 10 in. x 2 in., supported off 6 in. x 1 in. ribbon plate and spiked to studs. Stiffen floor joists with 1½ in. x 2 in. double herringbone nogging at 6 ft. 0 in. centres.

## CEILING AND ROOF FRAMING.

Ceilings shall be framed up from the following:—

- 4 in. x 1½ in. or 6 in. x 1½ in. joists, at 18 in. centres, with 1½ in. x 1½ in. fillets, or 16 gauge hoop iron straps to 10 in. x 2 in. hanging beams, packed up clear of joists. Space hanging beams not more than 6 ft. 0 in. apart.

Roof shall be framed up from

- 4 in. x 1½ in. or 6 in. x 1½ in. rafter, at 18 in. centres, with 6 in. x 1½ in. hips, valley and ridges. Support with 4 in. x 3 in. purlins and 4 in. x 3 in. struts at 7 ft. 0 in. centres.
- 4 in. x 1½ in. collar ties to brace every pair of rafters over 10 ft. 0 in. long.

## WINDOW AND DOOR FRAMES.

To conform to the usual standard practice, and add—Flash over heads of door and window frames with lengths of 24 gauge galvanised iron, bent and graded, fixed to studs and let into brickwork joints.

Also specify usual flashing where frames are set internally, point up around frames with mortar or, preferably, mastic putty.

## EAVES CONSTRUCTION.

As usual.

BRICK VENEER

# Recommended Standard Practice For FIBROUS PLASTER INTERIORS

5

BUILDERS ARE ADVISED TO ADOPT THE LONG ESTABLISHED PRACTICE OF HAVING ALL FIBROUS PLASTER SUPPLIED AND FIXED BY THE MANUFACTURER. THIS ASSURES FIRST-CLASS WORKMANSHIP AND THE BEST POSSIBLE RESULTS. A LIST OF PRODUCTS FOR DOMESTIC BUILDINGS AND AN OUTLINE SPECIFICATION COVERING THEIR APPLICATION IS GIVEN TO GUIDE USERS OF FIBROUS PLASTER.

## PRODUCTS.

### MANUFACTURE.

Fibrous Plaster products shall be manufactured from Gypsum Moulding Plaster, Hemp Fibre or Hessian scrim or wood laths incorporated together to produce a hard, evenly reinforced product free from surface blemishes and other imperfections.

All manufacture shall be in accordance with the conditions set down in Australian Standard Specification for Fibrous Plaster (E) A 504-1942.

### FIBROUS PLASTER PRODUCTS AVAILABLE FOR DOMESTIC BUILDINGS.

Plain sheets  $\frac{1}{4}$  in. and  $\frac{1}{2}$  in. thick for walls and ceilings in a wide range of sizes up to 24 ft. x 7 ft. for covering one complete wall to door head height.

### TILE PATTERN SHEETS.

For Kitchens and Bathrooms, available in sheets as large as 12 ft. x 6 ft.

### PLAIN AND ORNAMENTAL CORNICES.

A wide range of stock designs are available; where

required, special designs may be prepared by the Architect.

### COVER MOULDS.

Used for covering joints between sheets or applied to form decorative patterns.

### DECORATIVE CENTRE PANELS.

For ceiling decoration. Many sizes and designs available.

### VENTILATORS.

Perforated Fibrous Plaster Panels backed with flywire for covering ventilation openings.

### WINDOW PELMETS.

In the form of reinforced Fibrous Plaster fixed over the top of window openings to obscure curtain rods, etc.

### FIREPLACE SURROUNDS.

Ornamental Fibrous Plaster surrounds used around Gas and Electric Fires, these surrounds are easily fixed and provide an economical method of installing a heating unit in a small room, as they take up very little space.

## RECOMMENDED SHEET THICKNESSES TO USE.

Sheets  $\frac{1}{2}$  in. thick should be used for all ceilings and wall surfaces above door head; walls below door head should be covered with  $\frac{1}{4}$  in. thick sheets.

## FIXING MATERIALS.

### WALL FRAMING.

For first quality work it is recommended that all studs, plates and nogging be gauged to a uniform thickness.

### NOGGING.

All nogging, rinning, etc., necessary for the fixing of Fibrous Plaster work shall be provided and fixed by the builder. For timber-framed walls, nogging should be fixed in the following positions:—

- (a) At skirting height.
- (b) At 3 ft. above floor level.
- (c) At doorhead height.

### BATTENS.

Battens shall be Oregon or kiln-dried hardwood, not less than 1½ in. x 2 in. in size.

### STOPPING PLASTER.

Stopping plaster shall consist of gypsum moulding plaster mixed with clean water.

### NAILS.

Shall be galvanised flat head nails and of the sizes shown in the table below:—

Materials to be fixed:		Nails:
Sheets ½ in. and ¾ in. thick	1½ in. x 10 gauge (min. G.I. clouts)	
Cornice and Cover Moulds	1½ in. x 14 gauge (min. G.I. nails)	
(small) . . . . .	1½ in. x 12 gauge G.I. nails	
or . . . . .	2 in. x 12 gauge (min. G.I. nails)	
(large) . . . . .		

### REINFORCING ANGLE.

All internal angles of stud walls will be reinforced with 2 in. x 2 in. or 1½ in. x 1½ in. x 26 gauge galvanised sheet run securely nailed to studs before plaster is fixed.

### JOINT REINFORCEMENT.

For scrimming shall be best quality steel reinforcing hemp or 8 oz. Hessian.

### FIXING.

#### SHEETS.

Shall be securely nailed to battens or studs at 18 in.

centres, excepting at internal and external angles, where they shall be spaced at 8 in. centres.

### CORNICES, COVER MOULDS, ETC.

All cornices, etc., shall be accurately butt jointed and mitred at corners and angles in perfect alignment. All cornices, etc., shall be nailed at 18 in. centres to studs, battens or plugs.

### APPLIED PANELS.

Shall be fixed in true relationship to the shape of the wall or ceiling and securely nailed in position. Scrim to ceiling joints wherever possible.

### TILE PATTERN SHEETING.

Fix in such a manner as to have all horizontal lines level and in proper relationship at corners.

### VENTILATORS.

Shall be screwed or nailed to studs or vent boxes, or the surface of the surrounding plaster sheet be secured and saturated with water before the vent is applied to the wall.

### PLINING.

All sheets, panels, etc., shall be held firmly against the fixing surface and the clouts and nails punched ¼ in. below the surface. Punching shall not be done until all fixing of architraves, skirtings, floors, etc., has been completed.

### STOPPING.

Nail holes, joints, angles, etc., shall be filled with stopping plaster which, after partially hardening, shall be cleaned off. It shall be followed by a final application, which shall be brushed and trowelled to match the adjacent surface.

### SCRIMMING.

All cornice mitres, flush joints, butt joints, external and internal angles shall be scrimmed with hemp fibre or hessian scrim thoroughly incorporated in and soaked with stopping plaster.

### BLEMISHES ON SHEETS.

Shall be removed by a scraper or joint rule before colouring.

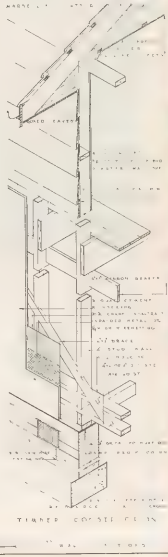
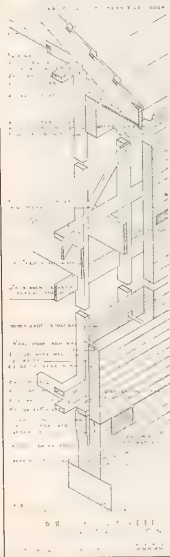


# TWO STORY CONSTRUCTION IN BRICK VENEER and TIMBER Recommended Details

5

BRICK VENEER

DETAILS OF BRICK  
VENEER CONSTRUCTION  
CONSISTING  
OF A FABRICATED  
TIMBER FRAME-  
WORK PROTECTED  
EXTERNALLY WITH  
A BRICK SKIN OR  
VENEER WALL  $4\frac{1}{2}$  in.  
THICK.



## A BEAUTIFUL FIBROUS PLASTER INTERIOR



Architect A. G. Ellis, by the skilful use of Fibrous Plaster for Walls and Ceilings, has emphasised easy circulation and natural lighting, the essentials of modern small home design. Delicately moulded cornices and window pelmets of Fibrous Plaster add that beauty of line which distinguishes a home from a house.

THE FOREGOING TECHNICAL INFORMATION CONCERNING BRICK VENEER CONSTRUCTION AND THE APPLICATION OF FIBROUS PLASTER IS PRESENTED ON BEHALF OF THE NEW SOUTH WALES, VICTORIAN, QUEENSLAND, SOUTH AUSTRALIAN, WEST AUSTRALIAN AND TASMANIAN FIBROUS PLASTER INDUSTRY BY THE

### ASSOCIATED FIBROUS PLASTER MANUFACTURERS OF AUSTRALIA

24 BOND STREET, SYDNEY, N.S.W.

**BRICK and BLOCK  
CONSTRUCTION**  
Also **STEEL FORM**

SECTION

**6**

SECTION

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Australian Plaster Industries Pty. Ltd. Catalogue

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# HOLLOW GYPSUM FLOOR BLOCKS



1 VICTOR-GYPSUM 2-WAY HOLLOW FLOOR BLOCKS 2 VICTOR-GYPSUM BEAM BLOCKS 3 VICTOR-GYPSUM 3-WAY HOLLOW FLOOR BLOCKS

# HOLLOW GYPSUM FLOOR BLOCKS

**Victor-Gypsum Two-way Hollow Floor Blocks** are totally enclosed one-piece blocks used in connection with the patented "Innes-Bell" Two-way Flat Slab System and Square Slab System.

**Victor-Gypsum One-way Hollow Floor Blocks** are totally enclosed one-piece blocks used in One-way Rib floor construction.

**Victor-Gypsum Beam Blocks** are closed end blocks with open soffits, and are designed for economical One-way Rib floor systems.

These Blocks and Systems of construction are being extensively used by leading Architects, Engineers and Builders throughout the Commonwealth and New Zealand.

## ADVANTAGES OF VICTOR GYPSUM FLOOR BLOCKS

### 1. FIRE RESISTANCE

The superior qualities of Gypsum as a building material possessing remarkable fire-proofing properties have been definitely established by numerous tests carried out by such institutions as the Underwriters' Laboratories Inc., the U.S. Bureau of Standards, the British Fire Prevention Committee, etc. Local tests have been conducted by the Metropolitan Fire Brigades Board of Melbourne, in compliance with requirements of Fire Underwriters, City Council and other building authorities.

### 2. SOUND AND HEAT INSULATION

Both sound and heat insulating properties are possessed to a large degree by Victor-Gypsum Hollow Blocks. Floor and roof slabs in which they are incorporated have exceptionally high insulating values.

### 3. STRENGTH AND FREEDOM FROM BREAKAGE

Victor-Gypsum Hollow Blocks, being thoroughly reinforced, are strong and tough. They are not easily damaged during handling or building operations, and the freedom from breakage assures true setting of blocks on the jobs, together with even soffits.

### 4. LIGHT WEIGHT

Victor-Gypsum Hollow Blocks are extremely light, being in some instances more than a third lighter than blocks of similar dimensions in other materials. Handling and placing costs are thus practically halved, and a very appreciable saving in dead weight on floors, columns and footings is effected (approx. 10 lbs. per sq. foot of floor area in the average office type building).

### 5. CLOSED ENDS

Victor-Gypsum Two-way and One-way Hollow Blocks are totally enclosed one-piece blocks. Victor-Gypsum Beam Blocks have open soffits, but closed ends. Thus perfect joints are assured where the blocks are battled together, and the necessity for special blocks to terminate the rows is obviated. The introduction of Cross Ribs, so desirable in one-way rib-construction, is also facilitated.

Open-ended floor blocks frequently leave gaping joints in soffits of slabs which the plasterer has difficulty in making good, and, by reason of their rough ends and imperfect joints, permit considerable loss of concrete into the interior of the blocks. This results in an increase in dead load to an unknown extent and an

increase in building costs of an amount which cannot be predetermined.

By the use of these one-piece and closed-end blocks, Architects and Engineers are assured of having a perfect hollow block floor and the Builder is guaranteed against loss of concrete. The numerous advantages gained by the use of Victor-Gypsum One-piece Blocks are immediately evident.

### 6. TAPERED BLOCKS

Tapered Blocks are procurable to provide increased concrete area near rib supports for resisting shear and negative bending stresses, and stirrups are frequently eliminated by their use. When used in conjunction with steel construction or with concrete beams not requiring flanges, the blocks may be extended right up to the beam soles.

### 7. UNIFORM SHAPES

Accurate uniform shapes and an absolute freedom from warping are ensured by the method of manufacture. True, clean soffits and an excellent key for plastering are provided.

Victor-Gypsum Hollow Blocks can be readily and cleanly sawn—a great convenience in placing conduits, junction boxes, etc., for wiring purposes, permitting them to be easily flushed into ceiling.

### 8. SAVINGS

Considerable savings are effected by the use of Victor-Gypsum Hollow Floor Blocks in—

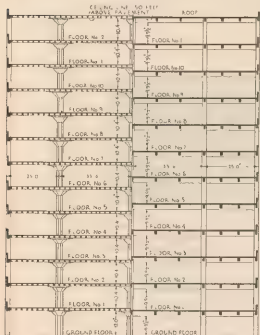
- (a) Railrage or freight.
- (b) Handling and hoisting.
- (c) Freedom from breakage.
- (d) Guarantee from loss of concrete.
- (e) Economy of plastering materials.
- (f) Floor, column, and footing construction owing to lightness of blocks.

## SERVICE

Additional information, illustrations, engineering details, specifications and forming methods will be supplied to Architects, Engineers, Builders and others interested in the use of Victor-Gypsum Hollow Blocks and the Innes-Bell Systems of Floor Construction, on communicating with Australian Plaster Industries Pty. Ltd., at their Head Office, Lorimer Street, South Wharf, South Melbourne, S.C.S., or any of their Interstate or N.Z. Offices.

# VICTOR-GYPSUM HOLLOW FLOOR BLOCKS FOR "INNES-BELL" TWO WAY FLOOR SYSTEMS

6  
1

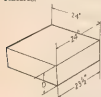


COMPARATIVE CROSS SECTIONS  
OF TALL BUILDINGS

The design shows 12 floors with Innes-Bell construction, as compared with 12 floors for the Slab and Girder type.

The use of the Innes Bell Hollow Block gives increased head room per storey and a greater number of floors for the same limit of building height.

This added floor should interest all concerned in the revenue-producing value of a proposed structure apart from other desirable features.



VICTOR-GYPSUM TWO-WAY  
HOLLOW FLOOR BLOCKS

SEE DRAWING												
DEPTH OF BLOCK	5	6	7	8	9	10	11	12	13	14		
WEIGHT PER BLOCK	53	57	61	65	69	73	77	81	85	89		

Special sizes and shapes to suit the particular requirements of any job can be supplied.

## "Innes-Bell" Two-Way Flat Slab System (Patent No. 12,151) ADVANTAGES

1. LONG SPANS of up to 40 feet obtainable at minimum cost.
2. RAPID CONSTRUCTION is a feature of this system.
3. CLEAN, SMOOTH CEILINGS, unbroken by projecting beams, ensure ideal distribution of light and perfect ventilation. No dead-air pockets exist.
4. STRENGTH AND RIGIDITY. The network of ribs in two directions renders this system ideal for supporting heavy concentrated loads. Resistance to deflection is much greater than that of ordinary flat slab floors.
5. INSULATION against sound and heat is ensured by the use of Victor-Gypsum Hollow Blocks.
6. FORMWORK is greatly simplified and reduced in cost, as a flat decking only is required; timber after stripping has a high salvage value, there being no wastage from cutting to short lengths. The open system of timbering may be employed if preferred.
7. STRIPPING COSTS are minimised, an sheeting drops away from ceiling upon removal of formwork, and is ready for re-use.
8. REINFORCING STEEL is considerably reduced in quantity and simplified. Long rods and stirrups are usually eliminated and cranking of rods is avoided. The arrangement of steel in ribs simplifies supervision, the omission of any rod being instantly detected.
9. DROP PANELS around column capitals are not required and the capitals themselves may be omitted for lightly loaded spans, e.g., in Office or Domestic Type Buildings.
10. HEAD-ROOM is unobstructed by beams, hence storey heights may frequently be reduced.
11. MECHANICAL EQUIPMENT, overhead runways, shafting, piping, etc., are attached more easily and simply owing to the absence of beams, and the number of sprinkler heads is reduced.
12. STRUCTURAL STEEL COLUMNS may be used in conjunction with these floors, simple, inexpensive bracing only being required.
13. OPENINGS in floors may be trimmed effectively by cutting hollow blocks where necessary to form beams contained within the depth of floor.
14. SAVINGS are effected in Concrete, Steel, Form-work, Stripping and Plastering Costs, and there is A GREAT REDUCTION IN TIME OF CONSTRUCTION.

## "Innes-Bell" Square Slab System

This system is distinctly economical, possessing all the advantages accruing from the use of One-piece Victor-Gypsum Hollow Blocks. Owing to the symmetrical properties of the slab supported on four sides and the use of the Hollow Blocks very little wastage of material occurs and the support of beams, being unnecessary in certain directions, are not required in certain directions.

Where, for architectural reasons, beam effects are desired, as in the case of ceilings over banked chambers, insurance offices, etc., this system may be used to advantage. The bays, for economy, should be square, or nearly so.

## GYPSUM GIRDER CASINGS

6

1

Gypsum Girder Casings offer the most economical and time saving method of filling in around Plate Girders and R.S.J.'s that have to be surrounded by concrete. Check prices show a saving on each cubic foot of concrete displaced. Gypsum Girder Casings will save money for building owners in the following ways: -

1. Saving on each foot of concrete replaced
2. Saving on steel owing to huge reduction of dead load.

3. Speeds up construction, as Girder Casings are installed more rapidly than concrete can be poured.

Gypsum Girder Casings are prefabricated units manufactured in lengths up to 12 ft. long, and in whatever widths and depths they are required. Designed to fit snugly against the flanges and webs of girders, they are easily held in position with wires or plugs until the concrete is poured. They are easily checked around stiffeners of plate girders.



GIRDER CASINGS BEING INSTALLED, SCIENCE BUILDING, MELBOURNE UNIVERSITY  
Architect: Public Works Department

### OTHER A.P.I. PRODUCTS

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**ARCHITECTURAL  
TERRA COTTA**

SECTION

**7**

SECTION

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WUNDERLICH'S CATALOGUE

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## ARCHITECTURAL TERRA COTTA

### Description

Wunderlich Terra Cotta is a burned clay product, usually, with a glazed face, made specially for a predetermined position on a building. In its simplest form (i.e. as ashlar) it may be described as blocks of burned clay, left hollow at the back.

The general use of Wunderlich Terra Cotta is as a facing for buildings, but it is employed also to enrich facades of brick, stone, or other materials, and as a decorative medium in the treatment of interiors.

### Wide Palette of Colours

Besides the natural burned clay finishes—namely, shades of Red, Chocolate, Buff and Grey—there are available glazed effects of either matt or lustrous appearance. These finishes range from Milky White and Cream tints to brilliant Yellows, warm Browns and Bronze; from Emerald to Dark Green, from delicate Lavender to bright or dark hues. Other colours include Blue, Grey, Black, etc. Furthermore, there are mixed colours that harmonize closely with natural geological formation and "Pulchrone" effects that combine several chosen colours on any individual block.

### Qualities and Advantages

Wunderlich Terra Cotta is plastic by nature, consequently any modelled ornamentation can be reproduced. It is economical in use, for from the original model of each respective unit, duplicates can be produced with facility. Wunderlich Terra Cotta is readily anchored to concrete or bonded in with brickwork. It is easy to hoist and handle into position.

Terra Cotta is durable and fire-resisting; the smooth glazed surface offers no lodgement for dirt or grime, hence every shower restores the cleanliness of the surface.

### Price

As Wunderlich Terra Cotta is specially manufactured for specific positions on a building, the price depends on the extent of the work, the amount of repetition and ornamental detail and the colour effects desired. On receipt of plans and all particulars we will furnish flatations for the material delivered on the site. Architects are requested to solicit our early co-operation where Terra Cotta is involved, as the whole question should be settled before the structural elements of a building are finalized.

In every city in Australia there are buildings faced with Wunderlich Terra Cotta. A catalogue illustrating many of these in colour will be furnished on request.

## ENAMELLED FACE BRICKS

Wunderlich Enamel Face Bricks are made of selected Terra Cotta Clay and possess a colourful glazed face similar to Architectural Terra Cotta and Ceramic Facing, but, unlike the blocks, have a solid clay body. Whereas Terra Cotta Blocks have to be purpose made for their particular place on a building, Enamelled Face Bricks, by reason of their stock size and shape, may be had at short notice and, as a structural unit, readily bond with ordinary building bricks.

## CERAMIC FACING

Ceramic Facing is glazed architectural terra cotta in the form of machine extruded ashlar slab units, square or rectangular in shape, and of standard thickness of 1 1/2 in. This facing medium is readily and effectively applied to building facades by the method indicated in Detail Drawings which we are pleased to supply on request.

Whilst hand moulded Terra Cotta, of the usual standard 4 in. thickness, remains the recognized method of producing moulded, ornamental, or special shapes, the new Ceramic Facing is the modern practical material for facing plane faced wall surfaces.

An ingenious system of machine surfacing—termed "Dry Finishing"—is employed, during manufacture, to ensure a true square finish to face and edges of Ceramic Facing blocks.

Unlimited scope is offered to architects and designers using Ceramic Facing by the infinite variety of colour concepts that may be achieved through the wide range of permanent glass finishes which are available for the selection of the most discriminating tastes.

The glazes, after air pressure application to the clay surface, are subjected to kiln firing at an extremely high temperature, so that the glass finish, after cooling, presents an impervious and brightly hued face, either lustrous or matte, which cannot fade or discolour in the dust and fume laden atmosphere of the modern city.

No costly and tedious painting operations are necessary to maintain the clean, colourful cheerfulness of Ceramic Facing. The inevitable film of city grime, which is deposited even on highly polished glass, over a period, may be speedily removed by the simple expedient of washing the surface of Ceramic Facing with soap powder and clean water.

Ceramic Facing can be used both architecturally and for the more utilitarian requirements in commercial, institutional and domestic structures.

### Exterior Uses

Facing to Entire Facades.

As trim to focal points, Entrances and Windows, Light Wells.

In conjunction with stone, brick or other mediums.

Surrounds to Store Fronts and Display Windows.

### Interior Uses

Lobby Walling and Dadoes to Corridors

Power House and Gymnasium Walls.

Lavatory and Wash Room Walls.

Stump Partitions in Large Kitchens and Food Preparation Rooms for standard and other Institutions.

(For Partitions requiring a glazed face on two sides we can supply double faced blocks 4 in. thick, which can be built up without lumber, brick, or concrete core. This method achieves, in a single operation, a partition with two ceramic glazed faces, in lieu of the present method of building core wall and later tiling each side with small unit glazed wall tiles.)

Fireplaces and Front Hearths.

Enamelled Face Bricks are made in one standard size, viz., 9 in. x 4 1/2 in. x 3 1/2 in. Standard specials, such as Bullnose, etc., are also stocked.

Attractive and informative Booklets, dealing more fully with our Ceramic Manufacturing process, may be had upon application to any of the offices listed above. A regular personal visit to our Showrooms will keep you well informed of modern trends in Building Materials of Quality.

WUNDERLICH LIMITED Manufacturers of BUILDING MATERIALS OF QUALITY



*True Colour Photographic  
Reproductions featuring*

# WUNDERLICH $\frac{7}{1}$ CERAMIC FACING

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**PHOSPHATE HOUSE,  
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For "CERAMIC FACING"  
see "WATERLOO" page 113

◆  
**ADMINISTRATIVE BUILDING, FOX  
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Architects, T. W. HODGSON & SONS

Builders, ROBERT WALL & SONS Pty. Ltd.





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# REINFORCEMENTS

SECTION

8

SECTION

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CATALOGUES 1 and 2

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# A.R.C. ENGINEERING CO. PTY. LTD.

8

1

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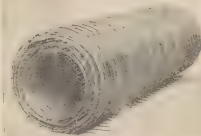
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## Products

B.R.C. Electrically Cross-Welded Steel Wire Fabric for Floors, Roads and Slabs  
B.R.C. Systems of Reinforced Concrete Construction  
B.R.C. Lintel, Beam and Column Reinforcing Units—  
B.R.C. Hoops, Helical Wrappings and Stirrups—B.R.C. Reinforcements for Standard Piles, for Bunkers, Silos, Bridges, Retaining Walls, Piers, Culverts, Sewers, Water Mains, Bathing Pools.

## Manufacturing Plant

At Sunshine, Victoria, and at Strathfield, N.S.W., we have established up-to-date plants for the manufacture and fabrication of our Reinforcements from Australian Steel.



A Roll of B.R.C. Fabric

## Description and Details of B.R.C. Fabric

B.R.C. Electrically Cross-Welded Steel Wire Fabric is the ideal reinforcement for concrete slabs and surfaces. It consists of a wire mesh made up of a series of parallel, longitudinal wires, held at fixed distances apart by means of transverse wires arranged at right angles to the longitudinal ones, being securely welded to them at the points of contact by a patented electrical process.

The wire used is best quality hard drawn mild steel.

The appearance of the finished product is illustrated in the accompanying photograph of a roll of B.R.C. Fabric.

TABLE 1  
PROPERTIES OF STANDARD SIZES

PAGES Ref. No.	SIZE OF MESH AND OF WIRE					TENSILE STRENGTH		SIZES AND WEIGHTS OF ROLLS AND SHEETS				SHEETING DIMENSIONS	
	Width in feet	Length in feet	Weight per sq. ft.	Weight per sq. yd.	Weight per sq. ft.	Width of mesh (in.)	Weight of mesh (lb.)	Width of standard roll (in.)	Length of standard roll (ft.)	Weight of standard roll (lb.)	Weight of standard roll (kg.)	Length of sheet (ft.)	Width of sheet (ft.)
1	12	51	3.0	2.7	3.0	12	10.0	12	51	10.0	10.0	51	12
2	12	51	2.0	1.8	2.0	12	6.7	12	51	6.7	6.7	51	12
3	12	51	1.0	0.9	1.0	12	3.3	12	51	3.3	3.3	51	12
4	12	51	0.5	0.4	0.5	12	1.7	12	51	1.7	1.7	51	12
5	12	51	0.2	0.1	0.2	12	0.8	12	51	0.8	0.8	51	12
6	12	51	0.1	0.0	0.1	12	0.4	12	51	0.4	0.4	51	12
7	12	51	0.0	0.0	0.0	12	0.2	12	51	0.2	0.2	51	12
8	12	51	0.0	0.0	0.0	12	0.1	12	51	0.1	0.1	51	12
9	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
10	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
11	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
12	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
13	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
14	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
15	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
16	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
17	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
18	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
19	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
20	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
21	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
22	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
23	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
24	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
25	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
26	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
27	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
28	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
29	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12
30	12	51	0.0	0.0	0.0	12	0.0	12	51	0.0	0.0	51	12

## FLOOR SLABS

8

## Design of Floor

In designing ordinary floors it is the custom to assume that the floor may have to carry a certain evenly distributed load, depending in amount on the purpose for which the floor is to be used. It is seldom that such evenly distributed loading actually does occur, except in the case of warehouse buildings, where goods are piled in a regular manner, but it is impossible to gauge exactly how a floor will be loaded, and the assumption of an evenly distributed load, sufficient to provide for unusual loads (such as, for instance, when a room in a dwelling-house or office building may become crowded with people) is a rational treatment, and at the same time simplifies the design.

In cases such as those floors required to carry heavy machinery, large safes, and the like, special designs are necessary.

## Floor Thickness

Where the thickness of floor is not already determined by other considerations, the most economical floor to adopt is that in which the concrete and the reinforcement are stressed in proportion to their respective strengths.

The thickness of the floor should not be less than one-thirtieth of the span.

## Reinforced Brickwork

The difference in strength between plain brickwork and reinforced brickwork is an great as, if not greater than, that between plain and reinforced concrete.

A reinforced brick wall will withstand horizontal pressure from either side, such as that of wind or of material piled against the wall, and will also act as a vertical beam carrying its own weight from pier to pier.

R.R.C. Brick Wall Reinforcement consists of steel wire mesh, which lies flat and can be used without having to increase the thickness of the mortar joint. For 4½ in. walls the mesh consists of two strands of wire three inches apart with cross wires welded to them at intervals of 12 inches; for 9 in. walls, two strands of wire six inches apart, and cross wires at 12 in. intervals.

Walls should be built with cement mortar and the reinforcement is put in every fourth, third, or second course, or every course depending on the length of wall and whether it is an outside wall or partition wall.

## TABLES

The following tables have been prepared for R.R.C. reinforcements. The formulas used in the calculations have been recommended in the Report of the Joint Committee on Reinforced Concrete.

The working stresses are as follows.

	lbs. per square inch
Concrete in compression in beams ..	750
Concrete in compression in columns ..	600
Concrete in shear ..	40

	lbs. per square inch
Adhesion of concrete to steel ..	90
Steel rods and bars in tension ..	18,000
Steel wire in tension ..	25,000
Ratio of Co-efficient of Elasticity of steel to that of concrete ..	15

The concrete allowed for is composed of a 4-2 1 mix of broken stone, sand and cement.

TABLE 2

Reinforcement No. for Slabs		Thickness of Concrete (in.)		Approx. Weight of Reinforcement per sq. ft. of floor		SAFE LOAD—UNIFORMLY DISTRIBUTED—LBS. PER SQUARE FOOT											
						SPAN IN FEET											
						2	4	6	8	10	12	14	16	18	20	22	24
1	9	112	8339	4597	2120	114	114	114	114	114	114	114	114	114	114	114	114
2	9	112	8617	4788	2081	2270	143	114	114	114	114	114	114	114	114	114	114
3	9	112	8901	4979	2042	114	114	114	114	114	114	114	114	114	114	114	114
4	9	112	9185	5170	2003	114	114	114	114	114	114	114	114	114	114	114	114
5	9	112	9469	5361	1964	114	114	114	114	114	114	114	114	114	114	114	114
6	9	112	9753	5552	1925	114	114	114	114	114	114	114	114	114	114	114	114
7	9	112	10037	5743	1886	114	114	114	114	114	114	114	114	114	114	114	114
8	9	112	10321	5934	1847	114	114	114	114	114	114	114	114	114	114	114	114
9	9	112	10605	6125	1808	114	114	114	114	114	114	114	114	114	114	114	114
10	9	112	10889	6316	1769	114	114	114	114	114	114	114	114	114	114	114	114
11	9	112	11173	6507	1730	114	114	114	114	114	114	114	114	114	114	114	114
12	9	112	11457	6698	1691	114	114	114	114	114	114	114	114	114	114	114	114
13	9	112	11741	6889	1652	114	114	114	114	114	114	114	114	114	114	114	114
14	9	112	12025	7080	1613	114	114	114	114	114	114	114	114	114	114	114	114
15	9	112	12309	7271	1574	114	114	114	114	114	114	114	114	114	114	114	114
16	9	112	12593	7462	1535	114	114	114	114	114	114	114	114	114	114	114	114
17	9	112	12877	7653	1496	114	114	114	114	114	114	114	114	114	114	114	114
18	9	112	13161	7844	1457	114	114	114	114	114	114	114	114	114	114	114	114
19	9	112	13445	8035	1418	114	114	114	114	114	114	114	114	114	114	114	114
20	9	112	13729	8226	1379	114	114	114	114	114	114	114	114	114	114	114	114
21	9	112	14013	8417	1340	114	114	114	114	114	114	114	114	114	114	114	114
22	9	112	14297	8608	1301	114	114	114	114	114	114	114	114	114	114	114	114
23	9	112	14581	8799	1262	114	114	114	114	114	114	114	114	114	114	114	114
24	9	112	14865	8990	1223	114	114	114	114	114	114	114	114	114	114	114	114
25	9	112	15149	9181	1184	114	114	114	114	114	114	114	114	114	114	114	114
26	9	112	15433	9372	1145	114	114	114	114	114	114	114	114	114	114	114	114
27	9	112	15717	9563	1106	114	114	114	114	114	114	114	114	114	114	114	114
28	9	112	16001	9754	1067	114	114	114	114	114	114	114	114	114	114	114	114
29	9	112	16285	9945	1028	114	114	114	114	114	114	114	114	114	114	114	114
30	9	112	16569	10136	989	114	114	114	114	114	114	114	114	114	114	114	114

Concrete and Reinforcement Proportioned for Maximum Economy.

Floor Slabs.—Continuous or with ends fixed. Reinforced with R.R.C. Fabric. The weight of the floor itself has been deducted, and no allowance is necessary in respect thereof.

For loads to the left of the heavy line, R.R.C. Straps must be used to resist Shearing Stresses. For Safe Loads on Slabs with ends "Propped Supported" take two thirds of above loads, and deduct one third weight of floor.

## Hollow Block Floors

Hollow block construction is now used to a considerable extent in light buildings such as apartments and offices. The blocks may be either the one-way type or the two-way type. No cross beams are employed in the one-way type, except the small ribs of the floor slab formed between the rows of hollow blocks or tiles; in the two-way type, cross beams are placed at the columns. The blocks are placed directly upon the forms with the reinforcement in the spaces between them, and the concrete is filled in between the blocks and poured over the top to form the floor—the ribs thus form a series of comparatively light "T"-beams side by side with flanges (i.e., the floor thickness) usually 2 or more inches in thickness. B.R.C. reinforcing units used in this type of "T" beam, with B.R.C. electrically-welded mesh No. 688 manufactured especially for reinforcing the floor slab, ensures a highly satisfactory floor system of hollow block construction.

## Wall Reinforcements

The two principal types of concrete wall construction are the "bearing wall" type, as in concrete residences and the "curtain wall" type, which is generally used to fill in the panels between the girder and column, which form the skeleton frame of the building.

In both cases reinforcement is a prime necessity, and in the latter type is universally demanded by the City Building Regulations. In most cases where curtain walls are employed with a small percentage of wider openings, it is customary to use both horizontal and vertical reinforcement. B.R.C. Fabric No. 655 provides ideal two-way

reinforcement; an added feature when this reinforcing mesh is used is that the edges of window and door openings are stiffened by bending back the fabric into a U-shape.

External walls should not be less than 6 inches thick and internal walls may be 4 inches

## Beam and Column Wrappings

B.R.C. beam and column wrappings fabricated of No. 14 electrically-welded mesh have been extensively selected for use in fireproofing structural steel work.

When subject to fire the concrete protection to the steel work, unless properly protected and reinforced, will shatter and crumble off. Vibration is also liable to cause improperly reinforced supports of beams to crack.

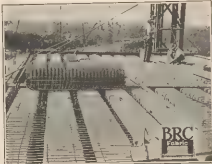
The use of ordinary beam and column wrapping is unsatisfactory, for it does not reach out into the corners, which are the weakest parts. B.R.C. electrically-welded wrappings are pre-shaped to fit and stand out from the steel work, and may be confidently relied on to eliminate all possibility of slipping from position or coming apart when applied.

## Piles

The advantages of reinforced concrete piles are many, absolute permanency, not being subject to decay, the economy, because of greater carrying capacity, can be cut short or lengthened to suit the case after driving has commenced.

The type of B.R.C. piles are in no way damaged by being driven. There are three standard shapes—square, octagonal and sheet piles. They are formed of rods riveted with B.R.C. Reinforced Helical Wrappings and hoops. They are made from 12 to 48 feet long and are fitted with cast iron or steel shoes.

Piles constructed with our B.R.C. reinforcements are stronger than any other form of reinforced concrete pile.



Hollow Block Floor Reinforced with B.R.C. Fabric, Adelaide Railway Station

## RECOMMENDED SIZES OF B.R.C. FABRIC REINFORCEMENT

Position	Reinforcement	Position	Reinforcement
Wall foundations under brick or concrete walls	No. 5 B.R.C. fabric standard sheets, 15' 6" x 26' 0"	Hollow block floor slabs (min. thickness 3 in.)	No. 88 B.R.C. fabric
Roof slabs, 3 in. or 4 in. thick	No. 519 B.R.C. fabric (on alling)	Internal walls, 4 in. thick	No. 616 B.R.C. fabric (for small areas)
Roof slabs, 3 in. or 4 in. thick	No. 415 B.R.C. fabric (on natural ground)	Internal or external walls, 9 in. thick	No. 655 B.R.C. fabric 27
	No. 402 B.R.C. fabric (on filled ground)	Rectangular or T beams	No. 14 B.R.C. fabric
	No. 3 B.R.C. fabric (for suspended floor)	Horizontal steel reinforced concrete	No. 14 B.R.C. fabric (with plain or grouped stirrups)
	(See Table 2)		

## Road Reinforcement

B.R.C. Fabric has been largely used, and with great success, to strengthen the concrete roadways and to bridge over the weak spots in the under-bed below. The fabric, being supplied in long rolls of 260 feet, or alternatively in flat sheets as required, is very easy to lay.

For the heaviest traffic it is usually sufficient to have a thickness of six inches, reinforced with No. 9 B.R.C., or No. 655 B.R.C. Fabric.

For lighter traffic the thickness of concrete may be reduced to five weak spots with a lighter gauge of reinforcement, No. 688, 12 or No. 14 Fabric, depending on the class of traffic and the nature of the ground. In view of the changing nature of traffic it is in most cases advisable to anticipate the advent of heavier traffic.

B.R.C. Fabric provides a perfect road foundation, even on weak ground, because it spreads each wheel load over a very large area of the under-bed.

## Floor Paving

Three special sizes of B.R.C. Fabric are made for use in all classes of concrete floors or pavements laid directly

on the ground, such as Office and Warehouse Basements, Workshop and Shed Floors, Platforms, Slopes and Embankments, Garages and Parks, Promenades and Foot-paths, Tennis Courts, and Reservoir Linings.

Such floors laid without B.R.C. Fabric almost invariably crack, especially if laid on filling. The liability to crack is considerably reduced, and in most cases, cracking is entirely eliminated by using a layer of B.R.C. Fabric in the concrete.

At the same time the thickness may be reduced and the floor be more quickly laid—a thickness of 3 inches or 4 inches of concrete is generally sufficient, but more may be required on soft ground. B.R.C. Fabric, Ref. No. 655, is recommended where the floor is built on top of filling, or where the loads are heavy. Ref. No. 610 is recommended where there is no filling and where the sub-soil is firm and floor loading is light. Ref. No. 688 is recommended for conditions of soil and loading intermediate between the above conditions of soil and loading intermediate between the above conditions, or where a job is required slightly stronger than the No. 610 and less costly than the No. 655.



ED. CAMPBELL  
& Son Pty. Ltd.  
Structural Steel  
Engineers  
MELBOURNE  
Phone FJ1126

# ISTEG

## Reinforcing Steel Data

SHEET No.

2

8  
2

ISTEG steel is ordinary mild steel treated by a patent cold twisting and stretching process which imparts the following advantages:-

1. It has 50% greater efficiency than the ordinary plain mild steel bar.
2. It saves one-third by weight of the steel reinforcement (in tension).
3. It saves all hooks and overlength due to the perfect bond it provides with the concrete.
4. Each ISTEG bar is individually tested.
5. ISTEG bars are free from scale.
6. ISTEG bars lend themselves to bending more easily than the ordinary mild steel bars.

ISTEG Steel was used in the building of the Bank of England

### EQUIVALENT SIZES AND WEIGHTS

PLAIN BAR at 15,000 lb./sq. in.				ISTEG STEEL at 27,000 lb./sq. in.		
Diameter ins.	Weight lb. per ft.	Area sq. in.	Exact equivalent Area in sq. in. at 27,000 lb./sq. in.	ISTEG Area sq. in.	Weight lb. per ft.	ISTEG Size in.
$\frac{1}{8}$	0.261	0.0767	0.0511	0.0552	0.188	$\frac{3}{16}$ *
$\frac{1}{4}$	0.376	0.1104	0.0736	0.0752	0.256	$\frac{1}{4}$ *
$\frac{3}{16}$	0.511	0.1503	0.1002	0.0982	0.334	$\frac{1}{2}$
$\frac{1}{2}$	0.668	0.1963	0.1309	0.1243	0.422	$\frac{3}{8}$ *
$\frac{5}{8}$	0.845	0.2485	0.1657	0.1534	0.522	$\frac{1}{2}$
$\frac{3}{4}$	1.043	0.3068	0.2045	0.2209	0.751	$\frac{3}{4}$
$\frac{7}{8}$	1.262	0.3712	0.2475			
$1$	1.502	0.4418	0.2945	0.3007	1.022	$\frac{7}{8}$
$1\frac{1}{8}$	1.763	0.5185	0.3457	0.3927	1.335	$1$
$1\frac{1}{4}$	2.044	0.6013	0.4009			
$1\frac{1}{2}$	2.347	0.6903	0.4602	0.4970	1.690	$1\frac{1}{4}$ *
$1\frac{3}{4}$	2.670	0.7854	0.5236			
$2$	3.015	0.8966	0.5911	0.6136	2.066	$2$
$2\frac{1}{4}$	3.380	0.9940	0.6527			
$2\frac{1}{2}$	3.765	1.1075	0.7384	0.7424	2.524	$2\frac{1}{2}$
$3$	4.172	1.2272	0.8181	0.8896	3.004	$3$

\* These sizes are not stock sizes at present

RAMSEY'S CATALOGUE



**CAST CONCRETE  
PRODUCTS**

SECTION

**9**

SECTION

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CATALOGUES 1 and 2

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Footpath paved with Hume Concrete Slabs, typical of many thousands of square yards laid in Melbourne City and Suburbs.



REINFORCED CONCRETE BOX CROSSINGS.



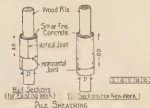
REINFORCED CONCRETE BOX CULVERTS.

### Hume Special Precast Concrete Products

Precast concrete articles are also manufactured using the same degree of care and workmanship in their manufacture as for Hume Concrete Pipes. A few of these articles are illustrated herewith.

Special precast units can be manufactured according to requirements.

Hume Paving Slabs manufactured by patented equipment are of compressed concrete, resulting in a first-class hard-wearing pavement.



REINFORCED CONCRETE KERB AND CHANNEL.



REINFORCED CONCRETE KERBING.


## HUME PIPE CO. (AUST.) LIMITED

Head Office:

Kinnear House, Cr. King and Little Collins  
Streets, Melbourne

Branch Offices in South Australia, West  
Australia, N.S.W., Queensland, Tasmania  
and New Zealand.

For further information of Branch  
Addresses, see Catalogue 99/8.



Type	L	B	D	Wt per sq ft	Wt per cu yd
A	4	5	4	5	40
B	5	5	4	6	45
C	5	6	4	7	50
D	5	6	5	8	55
E	5	6	6	9	60
F	5	6	7	10	65
G	5	6	8	11	70

CONCRETE PAVING SLABS.

OFFICE & WORKS  
INGLES STREET  
PORT MELBOURNE, S.C.7

SWANTON and BARRETT  
PTY. LTD.  
(CINDCRETE BRICK CO. Regd.)

Telephone:  
MX 2704, MX 2724

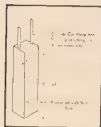
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## VIBRATED CAST CONCRETE PRODUCTS

### Manufacturers of:

"Cindercrete" and Concrete Hollow Wall and Floor Blocks, Paving Slabs, Lintels, Precast Cement Joists, Partition Slabs, Feeding and Watering Troughs for Horses, Cattle, etc. Suppliers and fixers of "Atlas" Concrete Roofing Tiles.

### Concrete Building Stumps and Fencing Posts



These stumps are reinforced throughout with steel rods. Hoop iron straps protrude either side for nailing to bearers; suitable for either timber or brick jobs.

Fence posts reinforced with four steel rods, slotted at top for barbed wire. Holes spaced at intervals of 14 in., 8 in., 8 in., 6 in., 6 in., 6 in., 4 in.,

and 3 in., measuring from the top of the post.

Size: 5 ft. 10 in. x 4 in. x 3 in. or 4 in.

### Precast Chimneys (illustrated)

Suitable for Lounge or Kitchen fireplaces. Made in sections which dovetail together up to 16 ft. 6 in. in height. These chimneys can be erected on the job site with unskilled labour.

### Post and Slab Fencing

Dignified appearance and durability are necessary qualities to be borne in mind in the selection of materials for Industrial Fencing and Dividing Walls. These qualities are a feature of Cast Concrete Post and Slab Fencing, which is also low in cost owing to the short time required for erection, compared with other materials. Full details of sizes, etc., will be supplied upon application.

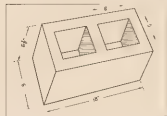
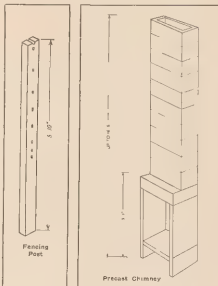
### Concrete Industrial Blocks (illustrated)

These blocks, made from crushed stone, sand and cement, are manufactured on heavy power operated machines giving great strength, square edges and uniformity of texture.

Concrete Industrial Blocks are eminently suited to Factory Construction and other Industrial Buildings.

Approved by all building authorities.

SWANTON & BARRETT PTY LTD., Engineering Division—Manufacturers of Concrete Blocks and Allied Machinery



A cordial invitation is extended to architects and engineers to inspect our "VIBRATED" Concrete Moulding Process. Please telephone MX 2704, so that we may arrange an appointment.

RAHMAN & CATALOGUE



**WATERPROOFING**  
**Etc.**

SECTION

**10**

SECTION

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CATALOGUES 1 to 8

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YU-R-ITE  
RENNIKS  
and  
DENSAGEL

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YU-R-ITE  
RENNIKS  
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DENSAGEL

YU-R-ITE  
RENNIKS  
and  
DENSAGEL

# RENNIKS and DENSAGEL

## WATERPROOFING MATERIALS

*Manufactured in Australia solely by*

## G. M. SKINNER PTY. LTD.

BRISBANE  
PARBURY, HENTY & CO. PTY. LTD.  
106 Edward Street

SYDNEY  
G. M. SKINNER PTY. LTD.  
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NEWCASTLE  
P. W. SADDINGTON & SONS PTY. LTD., 33 Watt Street

## YU-R-ITE, RENNIKS and DENSAGEL WATERPROOFING PRODUCTS

### **Integral Method of Waterproofing Cement Mortar and Concrete**

Briefly, the integral system of waterproofing is a process of making impermeable cement mortar or concrete by the addition to the mass of various substances which either act chemically on the cement, as lubricants for the aggregate, giving a denser mix, or simply as void fillers.

### **Need for Waterproofing**

Ordinary cement mortar and concrete, when applied under practical conditions contain a great number of small voids and spaces through which moisture can percolate. These voids are caused by the irregular shapes of the aggregates and also by the evaporation of the mixing water, which when evaporated leaves behind the cells or voids which it formerly occupied, and as these cells or voids are more or less connected a complete system of ducts throughout the entire mass is established. From the Australian factory of G. M. Skinner Pty. Ltd. come three distinct types of integral waterproofings. As no one product can overcome all difficulties met with in practice the judicious use of the three types can meet the demands of most waterproofing problems.

### **Yu-r-ite and Renniks Integral Waterproofings**

are processed from a base of pure mineral asphaltum and present the waterproofing properties of asphalt in a form which is easily and readily compatible with cement and concrete.

### **Yu-r-ite Heavy Duty Waterproofing Compound**

is designed to withstand water under high pressure. It is the only material of its type on the Australian market that can be used in relatively large amounts without interfering with the strength of the mix. In actual tests carried out at the University of Sydney the addition of Yu-r-ite to a concrete mix increased the compressive strength and improved the workability. Because of the plasticising effect of Yu-r-ite in cement mixes less gauging water can be used whilst still retaining the increased workability which allows for easy working both in cement mortar and concrete. Apart from waterproofing, Yu-r-ite greatly retards the destructive action of milk, brine, blood and molasses which react with ordinary cement mixtures causing them to become soft and friable.

Impermeability tests conducted by the University of Sydney P.N. Russell School of Engineering.

Tests on concrete in compression conducted by the University of Sydney P.N. Russell School of Engineering.

### **Renniks Waterproofing Liquid**

is chemically more reactive than Yu-r-ite, and in this class of material smaller quantities are used to waterproof cement mixes. In consequence of this two coat work is recommended when plastering pits or basements. Renniks is a general purpose material which has been used in some of the largest constructions in the Commonwealth. It will waterproof cement work and concrete, and laboratory tests show that it in no way interferes with the compressive strength of concrete. Renniks Waterproofing Liquid does not discolour cement work and can be used if necessary with white cement to produce a pure white surface.

Renniks will not encourage craze cracking when used in a cement mortar. This aspect is important as certain reactive types of waterproofing materials tend to greatly facilitate the formation of these surface fractures.

Impermeability tests conducted by Melbourne Technical College.

Tests on concrete in compression conducted by the University of Sydney P.N. Russell School of Engineering.

### **Densagel Waterproofing Liquid (Renniks No. 2)**

is manufactured from a chemically balanced formula which is complete in itself and therefore does not rely on a reaction with cement to bring about its waterproofing properties. Densagel has been used to a large extent to waterproof concrete and for this type of work it is most economical to use.

Impermeability tests conducted by the University of Sydney P.N. Russell School of Engineering.

Tests on concrete in compression conducted by the University of Sydney P.N. Russell School of Engineering.

N.B. The use of any type of Integral Waterproofing in cement mixtures cannot make up for incompetent workmanship or lack of the proper amount of cement. They are simply an addition to the mix and not a substitution for any material to be left out.

Copies of tests carried out on the impermeability of sand and cement mixtures incorporating the above products, also those showing the compressive strength of concrete containing the waterproofing agents are readily available to Engineers and Architects.

# YU-R-ITE, RENNIKS and DENSAGEL WATERPROOFING PRODUCTS

JOB	MATERIAL	QUANTITIES
WATERPROOFING MASS CONCRETE	YU-R-ITE HEAVY DUTY WATERPROOFING COMPOUND	9½ lbs of Yu-r-ite Heavy Duty Waterproofing Compound to each cu. ft. bag of cement used.
	RENNIKS WATERPROOFING LIQUID—GENERAL PURPOSE	One quarter Imperial gallon to each cu. ft. bag of cement used.
	DENSAGEL WATERPROOFING LIQUID	One quarter Imperial gallon to each cu. ft. bag of cement used.
WATERPROOFING CEMENT RENDERINGS AND TOPPINGS ABOVE SURFACE LEVEL	YU-R-ITE HEAVY DUTY WATERPROOFING COMPOUND	14 lbs. of Yu-r-ite Heavy Duty Waterproofing compound to each cu. ft. bag of cement used. Mix. 1 part cement, 3 parts sand.
	RENNIKS WATERPROOFING LIQUID	One quarter Imperial gallon to each cu. ft. bag of cement used. Mix. 1 part cement, 3 parts sand.
	DENSAGEL WATERPROOFING LIQUID	One quarter Imperial gallon to each cu. ft. bag of cement used. Mix. 1 part cement, 3 parts sand.
WATERPROOFING CEMENT RENDERINGS AND TOPPINGS BELOW SURFACE LEVEL AS FOR TANKS, BASEMENTS, LIFT PITS, ETC.	YU-R-ITE HEAVY DUTY WATERPROOFING COMPOUND	14-18½ lbs. Yu-r-ite Heavy Duty Waterproofing Compound to each cu. ft. bag of cement used. Mix. 1 part cement, 2 parts sand. Applied 1 coat.
	RENNIKS WATERPROOFING LIQUID	2-3 pints of Renniks Waterproofing liquid to each cu. ft. bag of cement used. Mix. 1 part cement, 2 parts sand. Applied 2 coats.
PLASTICISING OF CONCRETE TO IMPROVE WORKABILITY AND FACILITATE POURING	YU-R-ITE DENSAGEL POWDER	1½-2 lbs. of Yu-r-ite Densagel Powder to each cu. ft. bag of cement used.
ACCELERATING SETTING TIME OF CONCRETE	RENNIKS QUICK SET CRYSTALS	2-4 lbs. of Renniks Quick Set Crystals to each cu. ft. bag of cement used.
	RENNIKS QUICK SET No. 1 Incorporating a plasticising agent.	One quarter Imperial gallon to each cu. ft. bag of cement used.
ACCELERATING THE SETTING TIME OF CEMENT FOR PLUGGING CONCENTRATIONS OF WATER	RENNIKS QUICK SET No. 2.	Undiluted Renniks Quick Set No. 2 is added to neat cement to form a rapid hardening and waterproof plug.

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# YU-R-ITE, RENNICKS and DENSAGEL WATERPROOFING PRODUCTS

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JOB	MATERIAL	QUANTITIES
ACCELERATING THE SETTING TIME OF CEMENT MORTAR AND WATERPROOFING SAME	RENNICKS QUICK SET LIQUID	One quarter Imperial gallon to each cu. ft. bag of cement used
HARDENING CEMENT FLOOR TOPPINGS	RENNICKS FLOOR HARDENER	2-4 pints of Rennicks Floor Hardener to each cu. ft. bag of cement used.
RETARDING THE ACTION OF OILS ON CEMENT TOPPINGS.	RENNICKS OIL RETARDING LIQUID	2-3 pints of Rennicks Oil Retarding Liquid to each cu. ft. bag of cement used.
RETARDING THE ACTION OF LACTIC ACID, BRINE, BLOOD AND MOLASSES ON CEMENT MIXES. ALSO FOR URINALS	YU-R-ITE HEAVY DUTY WATERPROOFING COMPOUND	18½ lbs. of Yu-r-ite Heavy Duty Waterproofing Compound to each cu. ft. bag of cement used. Mix. 1 part cement, 2 parts sand
PRE-CAST CEMENT WORK. TO IMPROVE WORKABILITY AND DECREASE WATER CONTENT.	DENSAGEL CONCRETE DENSIFIER. (DENSAGEL C.D.) N.B. in conjunction with the above, Densagel Surface Colouring is available to stain the article such as tiles, lamp standards, etc.	1-2 pints of Densagel Concrete Densifier to each cu. ft. bag of cement used. N.B. This material lends itself particularly to the dry packing used in pre-cast cement work, improving the workability, whilst at the same time decreasing the amount of gauging water required, resulting in an increase of compressive strength.
WATERPROOFING OF BRICKWORK, STONE OR CEMENT SURFACES	YU-R-ITE COLOURLESS BRICK LIQUID Containing no linseed or other vegetable oils.	The clean dry surface to receive two coats of Yu-r-ite Colourless Brick Liquid Average covering capacity 45 sq. yds. per gallon
WATERPROOF PACKING FOR STEEL WINDOW FRAMES, GLASS BRICKS, REPAIRS TO SHIPS, ETC.	YU-R-ITE CAULKING COMPOUND IN COLOURS	Clean all joints free from dust and pack tight to surface with Yu-r-ite Caulking Compound Standard colours available: White, Grey, Buff, Black, Red. Special colours manufactured, minimum quantity 2 cwt.
ANTI-VIBRATION AND WATERPROOF PACKING FOR MOTOR BODY WORK	YU-R-ITE CAULKING COMPOUND, GRADE 77.	Yu-r-ite Caulking Compound Grade 77 to be applied only to a solid dust free surface and finished as desired.
WATERPROOFING GALVANISED IRON ROOFS	YU-R-ITE SEMI PLASTIC ROOF COATING. [Yu-r-ite Plastic Cement- Brushing Consistency]	Apply one heavy coat of Yu-r-ite Semi Plastic Roof Coating to the clean dry surface of the roof. Colours available—Black and Maroon

## YU-R-ITE, RENNIKS and DENSAGEL WATERPROOFING PRODUCTS

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JOB	MATERIAL	QUANTITIES
SEALING HOLES IN ROOFS, FLASHINGS, ALSO FOR EXPANSION JOINTS IN CONCRETE	YU-R-ITE PLASTIC CEMENT	Yu-r-ite Plastic Cement to be applied to all specified areas.
TERKA-COTTA, GRANITE AND STONWORK FLEXIBLE AND WATERPROOF JOINTING	YU-R-ITE CAULKING COMPOUND, GRADE 55.	All joints to be clean, dust free and dry Pack to surface with Yu-r-ite Caulking Compound Grade 55. Standard colours available. Red, Black, White, Grey and Buff
WATERPROOF DAMPCOURSE	YU-R-ITE HEAVY DUTY WATERPROOFING COMPOUND	Two courses of bricks to be laid in cement mortar made water- proof by the addition of 14 lbs. Yu-r-ite Heavy Duty Water- proofing Compound to each 94 lb bag of cement used
	YU-R-ITE DAMPCOURSE MORTAR (pre-mixed).	Two courses of bricks to be laid in Yu-r-ite Dampcourse mortar.
PRESERVATIVE FOR WOOD AGAINST WHITE ANTS, DRY ROT, BORERS AND FUNGUS DECAY	YU-R-ITE WOOD PRESERVATIVE.	To the clean dry surface apply two heavy coats of Yu r ite Wood Preservative.
WATERPROOFING PAPER AND CLOTH	PARTICULARS OF PRODUCTS SUITABLE FOR VARIOUS TYPES OF PAPER AND CLOTH GIVEN ON REQUEST.	

Yu-r-ite, Renniks and Densagel are the registered trade names of various types of waterproofing materials used mainly in the building industry. Produced at the Australian factory of G. M. Skinner Pty. Limited, some formulae are protected by patents, and are distributed throughout Australia and other countries by accredited agents, or manufactured elsewhere only by the express permission of the original patentees.

The distributing agents in each State of the Commonwealth carry stocks of the various lines, and are in a position to give advice on most waterproofing problems. Standard Specifications are available which cover a large range of waterproofing jobs.

On application to the manufacturers regarding any particular waterproofing problems, Specifications can be obtained free of charge to suit the job in question.

## YU-R-ITE, RENNIKS and DENSAGEL WATERPROOFING PRODUCTS For Building Construction and Maintenance

# W. & H. PITMAN

Patentees and Manufacturers

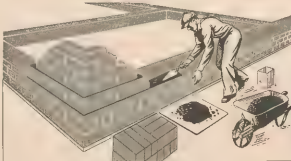
Makers of "Mor-air" Subfloor and Hooded Vents, also  
"Wire-crete" Vents

5 UNION STREET, SOUTH MELBOURNE

PHONE MX4180

## PITMAN'S PATENT DAMP COURSE

**Does Not Sweat  
or  
Perish**



Mixed in water to the consistency of ordinary mortar and applied as such, Pitman's damp-course adheres to the brickwork with strength equal to the best cement composition.

### COVERING CAPACITY

The covering capacity of one bag is approximately 24 sq. ft., laid to a thickness of 1in. finished. The following table sets out the covering capacities for various walls.

WALLS	4 1/2 in.	9 in.	11 in.	13 1/2 in.	18 in.
COVERS	78 ft.	38 ft.	27 ft.	21 ft.	16 ft.

Each bag contains 1 c.ft.



Pitman's No. 2 Damp-proof composition is prepared to be used as a rendering for exposed vertical work and damp-proof cellars, etc.

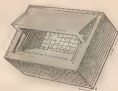
## PITMAN'S Registered Design VENTS

### The "Mor-air" Vent

is a specially designed air brick, 9in. x 9in. x 3in., in which there is a 6in. x 3in. opening. In this opening is inserted 8in. open square mesh galvanized flat woven wire. This wire is pressed into a recess on the back of the brick and then cemented, and gives 600 per cent. more air space than an ordinary terra cotta vent, and, when set between two courses of Pitman's Damp Course, makes a perfect combination. Made to match various colours of brickwork.



Manufactured in Red, Brown, S.G. Cement, etc.



Manufactured in Red, Brown, Glaze, Oatmeal and Cement.

### "Wire-Crete" Sub-Floor Vent

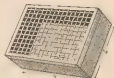
This illustration shows the simplicity in which "Wire-Crete" Vents can be built into walls having a reinforced cement framed back.

All that is necessary is to build it in as an ordinary terra cotta air vent, thus doing away with the unsatisfactory method of lugs.

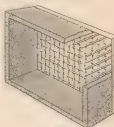
Simple to fix.  
Easily covered.  
Made in following sizes:—

9in. x 3in.  
9in. x 6in.  
14in. x 6in.

Other Sizes Made to Order.



FRONT ELEVATION



BACK ELEVATION  
SHOWING REINFORCEMENT

PRICES ON APPLICATION

# PITMAN'S

## PIONEERS of DAMPCOURSE MORTAR

Introduce:—

10

2

### Pitman's Cement Waterproofing Paste

For Waterproofing Cement Mortar and Concrete: Simply add 1 Part Paste to 12 Parts Mixing Water and mix as usual.

### University of Melbourne Tests on

#### Pitman's Waterproofing Powder and Paste

Mortars Made up of 3 Parts Standard Sand and 1 Part Cement.

A.—No waterproofers added. Water began to pass through at 35 feet head of water. Compressive Strength. 7640 lbs. sq. inch.

B.—1 part PITMAN'S WATER PROOFING PASTE added to 10 parts mixing water. No water passed through at 205 feet head of water; 7420 lbs. sq. inch.

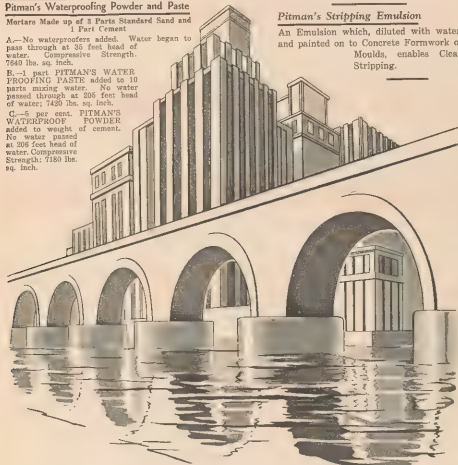
C.—5 per cent. PITMAN'S WATERPROOF POWDER added to weight of cement. No water passed at 205 feet head of water. Compressive Strength: 7180 lbs. sq. inch.

### Pitman's Cement Waterproofing Powder

For Waterproofing Cement Mortar and Concrete: Add 2 per cent. to 5 per cent. (by weight) Powder to Cement and mix as usual.

### Pitman's Stripping Emulsion

An Emulsion which, diluted with water, and painted on to Concrete Formwork or Moulds, enables Clean Stripping.



W. & H. PITMAN—Manufacturers

5 Union Street, South Melbourne

Telephone MX4180

HANSAY & CATALOGUE

# PROMURA

## CHEMICAL BUILDING PRODUCTS

22 Leichardt Street - Melbourne, C.I. - Telephone Cent. 2526

APPLICATION.	QUANTITIES REQUIRED	SOLUTION	SPECIFICATION
<b>"Promura 66" Moulding Compound</b>			
To make stripping of the form-work of concrete easier; to prevent deterioration of timber.	1 gallon for approx. 50 sq. yds. on timber or iron.	Ready for use	Give timber or steel moulding a generous coat with brush or spray gun. After a few minutes the forms are ready for the concrete filling.
<b>"Promura 77" Black Dampcourse Paste</b>			
Horizontal Dampcourse.	1 gallon for approx. 178 sq. ft.	1 part of "77" to 16 parts of water.	After specification of area add: "Provide 2 courses of 'Promura 77' Black Dampcourse Paste strictly in accordance with manufacturer's instructions."
<b>"Promura 100" Mortar Waterproof</b>			
Waterproof rendering: External.	1 gallon for 50 sq. yds. of plaster 1" thick.	1 part of "100" to 30 parts of water.	After specification of area add: "Apply a waterproof plaster 1" thick in two coats. The first coat shall be thicker than the second one and left rough or roughened to form a key for the second coat. The surface must be set but in a damp condition when the second coat is applied. The cement mortar must be composed of 1 part of cement and 3 parts of dry clean sharp sand. With every 30 parts of the gauging water mix 1 part of 'Promura 100 Mortar Waterproof'."
Waterproof rendering: Internal for Shower recesses, basement, walls, etc.	1 gallon for 36 sq. yds. of plaster 1" thick.	1 part of "100" to 20 parts of water.	Similar to Waterproof Rendering (External), with the exception of the last sentence which should read "With every 20 parts of the gauging water mix 1 part of 'Promura 100 Mortar Waterproof'."
Waterproof concrete roofs, balconies, etc.	1 gallon for approx. 24 cub. ft. of concrete.	1 part of "100" to 20 parts of water.	After specification of area add: "Provide a waterproof concrete slab of " thickness composed of 1 part of cement, 2 parts of clean, sharp, dry sand and 4 parts of screening. With every 20 parts of the gauging water mix 1 part of 'Promura 100 Mortar Waterproof'. Leave the top of the concrete slab rough or roughened to provide key for the following waterproof rendering. Provide sufficient slope to allow the water to run off, into the gutter. Care intersections between roofslab and parapet walls at least 3" Provide a waterproof rendering—see specification above."

Made in Australia

FOR FURTHER INFORMATION WRITE FOR COMPLETE SPECIFICATIONS



# PROMURA

## CHEMICAL BUILDING PRODUCTS

10

22 Leichardt Street - Melbourne, C.I. - Telephone Cent. 2526

3

APPLICATION.	QUANTITIES REQUIRED	SOLUTION	SPECIFICATION
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### "Promura 200" Quick Setter

Unexpected inflow of water. Caulking against trickling water and damp walls.	See special pamphlet.	Undiluted or 1 part "200" to 1 part of water according to setting time required.	See special pamphlet "Promura 200" Quick Setter
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### "Promura 300" Colourless Waterproof

Rendering outside walls im- permeable to rain and dampness.	1 gallon for approx 250 sq. ft.	Ready for use	After specification of area add: "Apply 'Promura 300' Colourless Waterproof to the thoroughly dry surface strictly in accordance with manufacturers' instruction." To be used on exterior walls only. GENERALLY ONE COAT IS SUFFICIENT
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### "Promura 400" Cement and Concrete Hardener

Hardening and protection against oils, acids on old or new concrete surfaces.	7 lbs for treatment of 25 sq. yds.	1 part "400" to 3 parts of water by weight.	After specification of area add: "The floor is to be hard- ened and made resistant against oils and acids by treatment with "Promura 400" Cement and Concrete Hardener strictly in accordance with the manufacturers' instructions."
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### "Promura 700" Black Bituminous Protective Paint

Waterproofing and insula- ting concrete, bricks and timber.	1 gallon for about 165-200 sq. ft. (2 coats.)	Ready for use.	To be used on clean, dry surfaces free from rust, grease, etc. Suitable for grain silos, water tanks, gutters, etc.
Protecting iron and other metals against rust or corrosion.	1 gallon for about 200 to 250 sq. ft. (2 coats.)		

### "Promura 900" Bituminous Plastic Compound

For filling holes, cracks on roof, pipes, skylight con- nections, etc.	Dependent upon ex- tent of damage to be repaired	Ready for use.	See special pamphlet. "Promura 900."
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#### INTERSTATE DISTRIBUTORS:

HOBART:  
William Crosby & Co.  
Pty. Ltd.,  
119 Collins St., Hobart.  
Tel. 6646.

LAUNCESTON:  
William Crosby & Co.  
Pty. Ltd.,  
32 Charles St., Launceston.  
Tel. 399.

ADELAIDE:  
C. W. McFarling, Floor  
Surfacing Co.,  
310 C.M.L. Building, King  
William St., Adelaide.  
Tel. Central 4188.

# STEADFAST

Jointing Compounds, Bituminous Paints, Roofing Compounds, etc.

by

**B. G. PLUMMER & CO.**

Phone MA9547

183 HAY STREET, SYDNEY

Established 1907

For many years our business has brought us into direct contact with waterproofing work of every description.

The glazing and jointing of our Roof Lights and Pavement Lights has necessitated the production of waterproofing mastics and compounds of a very high order, that these Lights may remain definitely water-tight when installed, as they are, in many of the finest buildings in Australia.

"Steadfast" Bituminous Paints and Jointing Compounds have been carefully tested and adopted by the N.S.W. Governments for use in their various departments throughout the State for the past twelve consecutive years.

"Steadfast" Paints and Compounds are as follows:—

"Steadfast" Semi-Liquid.—A brush applied compound, which forms a tough elastic water and acid-proof coating, ten times the thickness of paint. It expands and contracts with any surface to which it is applied, and will not run in summer or crack in winter; unparalled for waterproofing and preserving iron and malthoid roofs, damp walls, foundations, parapets, tanks, etc.

"Steadfast" No. 10, Water and Acid Proof Bituminous Paint.—Specially manufactured from a carefully blended pure bituminous base combined with selected waterproofing oils. For use on iron and malthoid roofs, concrete foundations, etc., pipes, tanks, cisterns, boilers, urinals, machinery, refrigerating coils, etc.

"Steadfast" Plastic.—A cold, trowel-applied waterproofing compound which sets to a tough rubber-like consistency and will not run under summer sun or crack in freezing winter. It will grip like a vice to almost any surface. The surface should preferably be dry, but in cases of emergency it will grip to a wet surface. "Steadfast" Plastic is indispensable for jointing slabs, stonework, tiles, pointing flashings, filling cracks, mending holes in iron roofs, gutterings, iron or concrete tanks, sealing pipe joints, pointing steel window, or for use in almost any situation where a lasting waterproof joint is required.

Although we have tried every available compound we have found "Steadfast" Plastic unsurpassed for jointing our Pavement and Skylights.

"Steadfast" (Hot) Jointing Compound.—A specially prepared elastic jointing compound with pure bitumen base. For similar uses to "Steadfast" Plastic described above, but used in cases where a hot applied compound is preferred.

"Steadfast" Mastic Putty.—For glazing Steel Windows, Skylights, Pavement Lights, etc. We have been using this mastic with entire success over the past 25 years in the glazing of our Roof Lights and Pavement Lights—a most difficult job.

Economical.—"Steadfast" Compounds and Paints are economically priced, averaging approximately 0/4 per gallon in 4-gallon tins. They can therefore be used extensively without extensive cost.

Application.—We have an experienced staff for the application of "Steadfast" Compounds and Paints on Iron Roofs, Flat Roofs, etc., and the joints of Pavement Lights, etc.

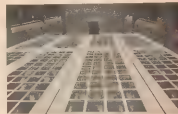
Flat Roofings.—We also undertake the laying or renovating of Flat Roofs with our "Steadfast" Bituminous Roll Roofing.



Salvation Army Headquarters, Sydney. Section of Iron Roof treated with "Steadfast" Semi-Liquid Compound.

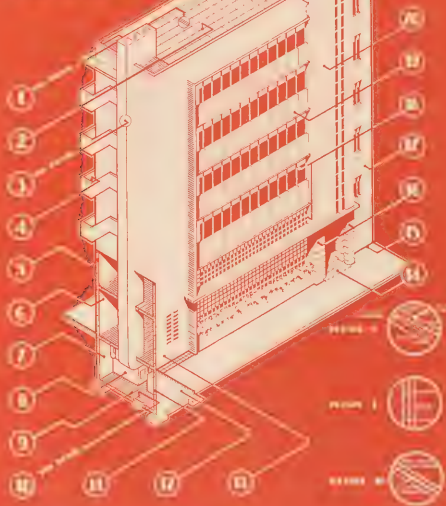


Commercial Bank of Australia, Head Office, Sydney. Roof dressed with "Steadfast" Hot Bitumen.



One of the four areas of "Primer" Skylights 12-14 O'Connell St., Sydney. Frames and Joints Waterproofed with "Steadfast" Mastic.

NONDOLITE



# APPLICATION OF NONPORITE PRODUCTS

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No.	APPLICATION	PRODUCT	SPECIFICATION
1	INSULATION OF FLAT ROOFS	MICALOX GRANULES in association with Portland Cement (MICACRETE)	Provide and lay a 2in. render composed of 1 part cement and 10 parts Micalox Granules.
	ALUMINIUM COATING, IRON ROOFS	PERMELASTIC ALUMINIUM COATING	Clean, and when dry, apply 1 coat Permelastic Aluminium Anti-Corrosive Coating
	INSULATION OF PITCHED ROOFS	MICALOX GRANULES	Provide and spread between joints on top of ceiling sheets a 2in. thickness of Nonporite Micalox Granules.
2	PERMANENT PAVING OF FLAT ROOFS	NONPORITE C.B.C.	Allow the P.C. sum of _____ for the application by Nonporite Pty. Ltd. of a C.B.C. Roof to the smoothly graded roof area.
	INSULATION OF FLUES AND LININGS	INSULOX BRICKS and CEMENTS	Provide and lay a 3in. thickness of Nonporite Insulox Bricks set in Refractory Cement
3	INSULATION OF PIPE LINES, COOL STORES, OVENS, Etc.	MICALOX CEMENT	Provide and fix Nonporite Micalox Cement to the required thickness between sections and around pipes in pipe flange support with butter cloth and coat with Permelastic "EF" Mastic or Aluminium Coating).
	SLIP-PROOFING AND HARDENING OF CEMENT FINISHES	SICALCOTE NON-METALLIC FLOOR HARDENER (Plain and Coloured)	Provide and apply a 2 coat dusted-on application of Nonporite Sicalcote using 2 lbs. per sq. yd. of floor area.
5	DENSIFYING AND PLASTICIZING OF CONCRETE	PLASTOGEL CEMENT ADMIXTURE	All concrete shall be made workable and dense by using Nonporite Plastogel Admixture in the proportion of 2 lbs. to each bag of cement in the mix
6	SOUND-PROOFING OF WALLS AND CEILINGS	MICALOX SOUND INSULATING PLASTER	All areas (specify) are to be sound-proofed by the application of a 2in. render applied in two coats of Nonporite Micalox sound insulating plaster, according to directions.
		NONPORITE No. 2 IN CONCRETE	All concrete is to be water-proofed by incorporating Nonporite No. 2 paste in the proportion of 1 quart to each bag of cement, added to the water used.
7	WATERPROOFING OF BASEMENT	NONPORITE No. 2 IN RENDER	All internal surfaces of basement are to receive a 2in. water-proof render in two coats using Nonporite No. 2 Paste in the proportion of 1 quart to each bag of cement, added to the water used.
		PERMELASTIC MEMBRANE SOLID	Membrane between floors is to be composed of Permelastic Solid laid 3in thick in 2 coats.
		NONPORITE PERMELASTIC BRUSH	All external surfaces of basement are to be damp-proofed by a 2-coat application of Permelastic Brush.
8	FURNACE LINING	GUARANTEED BASEMENT IN NONPORITE No. 2 RENDER	Allow the P.C. sum of _____ for the application by Nonporite Pty. Ltd. of a waterproof cement render to the interior surfaces of basement
		NONPORITE REFRACTORIES Bricks, Shapes, Cements, etc.	Consult Nonporite Pty. Ltd. for the correct recommendation and quotation for lining.
9	FLOOR HARDENING	METALCOTE METALLIC FLOOR HARDENER (Plain and Coloured)	Provide and apply a 2-coat dusted-on treatment of Nonporite Metalcote using 3 lbs. per sq. yd. For extremely severe conditions, use the integral monolithic treatment (See Spec 28.)

# APPLICATION OF NONPORITE PRODUCTS

No.	APPLICATION	PRODUCT	SPECIFICATION
10	MEMBRANE WATERPROOFING FLOORS—WALLS	PERMELASTIC "EF" MASTIC	Prepare a mixture composed of 1 part Permelaastic "EF" Mastic, 1 part cement, and 2 to 4 parts sand, varying with the position and requirements of the job. Lay flat, in two coats.
		PERMELASTIC SOLID MEMBRANE	Membrane between floors is to be composed of Permelaastic Solid, laid in thick in 2 coats.
11	CONCRETE WATERPROOFING	NONPORITE No. 2 and No. 3	All concrete shall be made waterproof by incorporating Nonporite No. 2 (or if acceleration is desired, Nonporite No. 3) in the proportion of 1 quart to each 94 lb. bag of cement, added to the water used.
12	BELOW GROUND DAMP-PROOFING	PERMELASTIC BRUSH	All surfaces below ground shall be damp-proofed by the application of Permelaastic Brush in two coats.
13	WATERPROOF RENDERING	NONPORITE No. 2 PASTE	All render (external or internal) is to be composed of 1 part cement, 5 parts sand, and water-proofed by using Nonporite No. 2 Paste in the proportion of 1 quart to each 94 lb. bag of cement, added to the water used. Two coat work recommended. Minimum finished thickness, 1 in.
14	ANTI-SLIP TERRAZZO AGGREGATE	ALTERRAZZO	All terrazzo shall be made slip-proof by incorporating Alterrazzo aggregate with the marble chips before final packing. Use 1 lb per square yard.
15	DAMPCOURSING	NONPORITE DAMPCOURSE MORTAR or ADMIXTURE	Construct No. 1 or 2 dampcourse by bedding 1) or 2) course(s) of brickwork in Nonporite Dampcourse Mortar. Note: For parapet work use grey or coloured Dampcourse Mortar, or mix 1 bag cement, 2½ bags sand, with 1 gallon Nonporite Dampcourse Admixture, and lay as dampcourse.
16	STAINPROOF STONEMWORK	PERMELASTIC BRUSH	All stonework shall be damp-proofed at the back by the application of two coats of Nonporite Permelaastic Brush.
		NONPORITE No. 1 TRANSPARENT	All areas (specify) when dry are to be saturated with Nonporite No. 1 transparent waterproofing liquid. Or brickwork, two coats are normally required.
17	SURFACE WATERPROOFING	MASONRY STAIN COLOURED	All areas (specify) when dry are to be waterproofed and coloured by the application of Nonporite Masonry Stain, two coats (if light colour is chosen, three coats). If work is new, all cement is to be neutralized with Nonporite Neutralizer before priming. Prime dry surface with one coat Nonporite No. 1.
18	CAULKING WINDOWS, GLASS BRICK SETTING, EXPANSION JOINTING	ELASTITE CAULKING COMPOUND	All joints (specify) are to be caulked with Nonporite Elastite Caulking Compound of selected Colour.

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# APPLICATION OF NONPORITE PRODUCTS

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No.	APPLICATION	PRODUCT	SPECIFICATION
19  20  External Wall Finish	WATERPROOF SPANDRIL SETTING WATERPROOF JOINTS	NONPORITE No. 2  Grey or Coloured DAMP-COURSE MORTAR	All combs shall be composed of 1 part cement, 3 parts sand, waterproofed by the addition of Nonporite No. 2, using 1 quart to each 94 lb. bag of cement added to the water used.
	FLANKING	RENDERITE "R"	All joints in brickwork, terra-cotta, or stonework are to be waterproofed by pointing with Nonporite Dampcourse Mortar of selected shade.
	FINING	RENDERITE "F"	All areas (specify) shall receive a 3/4 in. render of Nonporite Renderite "R", a premixed waterproof flanking.
	COLOURING	NONPORITE CEMENT PAINT	All areas (flanked) shall receive a finishing coat of Nonporite Renderite "F", a premixed coloured flanking.
	WATERPROOFING COLOURING	MASONRY STAIN	All surfaces (specify) are to be coloured and damp-proofed by the application of two coats of Nonporite Cement Paint.
	CEMENT COLOURING	PERMATONE DRY COLOURS	All surfaces (specify) are to be waterproofed and coloured by the application of two coats of Nonporite Masonry Stain.
	FIREPLACE SETTING	REFRACTITE FIREPLACE CEMENT	All finishing or mortar pointing is to be coloured to architect's satisfaction with Nonporite Dry Colours.
			All brickwork in fireplace back sides and hearth is to be set in mortar composed of 1 vol. REFRACTITE FIREPLACE CEMENT and 1 1/2 vol. of clean sand. No water to be added.

## NONPORITE PTY. LTD.

292-6 BURWOOD ROAD, HAWTHORN, E.2., VICTORIA, AUST.

Telephone Hawthorn (WJ) 801 and 5801-2

Products for waterproofing, protecting, colouring and maintaining all types of structures, new and old, under all conditions. Acid-proofing and floor hardening for industrial use. Furnace refractories and fire cements. Insulation materials for heat, and sound.

### New South Wales:

McKinlay Fletcher Pty. Ltd.  
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P.O. Box 115B,  
Hong Kong.



MARKETED IN AUSTRALIA BY THE SHELL COMPANY OF AUSTRALIA LIMITED

## WHAT IS FLINTKOTE?

Flintkote Industrial Bituminous Emulsion is a pure bitumen broken up into minute particles in the presence of water and a small percentage of a selected type of inert mineral colloid.

It has the appearance of a brownish paste of thick creamy consistency and turns to a black colour after exposure to the atmosphere, and on evaporation of the water content.

Bitumen in emulsified form is handled cold and eliminates the objections and risks of heating, and the danger of use of solvents.

It can be diluted with water and applied to a damp surface. It can be easily mixed with cement and cold aggregates for the various protective coatings employed.

It is impervious to water and gases.

It will neither flow nor creep under extreme heat nor crack under freezing conditions.

After Flintkote has reverted to bitumen it cannot be dissolved or washed away by rain.



S.E.C. Yellourn. Power house stacks protected against corrosion with Flintkote.



Commonwealth Serum Laboratories, Melbourne. Acid resistant Flintkote flooring in tankhouse.

## WHAT ARE ITS USES?

Flintkote is used as a protective coating on all types of surfaces for waterproofing, for anti-corrosive coatings and for base and similar work. It can also be used under a tile at all conditions. It is generally employed in refrigeration chamber construction.

A normal use for Flintkote is for the preparation of heavy duty mastics for flooring. Such mastics will successfully withstand extreme conditions of abrasion where concrete surfaces and joints fail under concentrated loads of non-tyred trucks.



Flintkote flooring machine deck for Empire at Wharfedale, South Yorkshire.

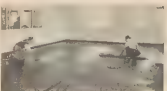
## WHAT ARE ITS PROPERTIES?

By incorporating various amounts of bitumen (to which Flintkote reverts) in mastics of different kinds and qualities, various types of mastics can be produced for general waterproofing or for special purposes. These mastics are not flammable and are not so liable to intended for this purpose.

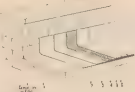
The non-flowing properties of a dried film of this type of emulsified bitumen is due to an internal reinforcing structure which takes the shape of a honeycomb formed by the mineral colloid used in the emulsifying process.

Flintkote therefore resists any tendency to flow under extremes of heat, will not crack at low temperatures and will not craze or "alligator" when exposed to the elements. The action of this reinforcing structure in a Flintkote film makes possible the practical and efficient use of these soft bitumens which give more flexible waterproof and long-wearing coatings but which cannot be used under ordinary conditions because of their tendency to flow when exposed to warm temperatures.

The non-flow properties of Flintkote are clearly demonstrated by impinging the flame from a blow lamp on a thick film of Flintkote painted on a vertical surface; the bitumen film will singe and char to a coke but will not flow.



Flintkote Acid Proof Floor being laid in Factory for Electrode Pty. Ltd., South Yarra, Melbourne.



Water-tightening Compound, 120 lb. concrete block at Simpson's factory for waterproofing work.



Spreading membrane in first coat of waterproofing.



80,000 sq. yds. of Newby Tunnel, Eng. Road, was treated with Flintkote for shuter board.

## ROOFING

### Application over Concrete Surface.

1. Clean concrete and hose thoroughly.
2. To form a ridge, apply to desired height up the wall and over the base a priming coat of—
  - 1 volume Cement
  - 3 volumes Water
  - 6 volumes Flintkote, at one gallon per one hundred square feet

When dry apply a coat of—

- 1 volume Cement
- 2 volumes Water
- 6 volumes Flintkote, at two gallons per 100 square feet

When the last coat is still wet, gently press on linen chamois cloth membrane, or 7 oz. open weave mesh, which has been pre-shrunk in water.

Allow to dry and then apply a sun or T. 2. 6 coat of two gallons per one hundred square feet.

Lay a wearing course  $\frac{3}{4}$  in. thick of the following mix—

- 1 volume Cement
- 2 volumes Flintkote
- 4 volumes clean coarse sand, to which should be added approximately one volume of water to give a trowelling consistency.

Cure for twenty-four hours with damp hessian or sand and keep traffic off the surface for the following forty-eight hours.

Correct drainage is essential as well as heat insulation can be obtained by an intermediate layer composed of 6 volumes  $\frac{3}{4}$  in. granulated cork to 1 volume Flintkote. Added protection for the final Flintkote layer can be obtained by the use of light coloured roofing tiles or Telford's famous road emulsion with a covering of coarse washed gravel.

## WATER PROOFING

**NEW STRUCTURES—BELOW GROUND.**—The best method is to sandwich bitumen between two layers of concrete as this will ensure an absolutely waterproof result.

When a certain thickness of the concrete base and walls has been poured and brought to a smooth surface, it must be allowed to dry till sufficient has been poured and brought to a smooth surface. At all angles joints a cement core must be made.

**COVES.**—1. Clean thoroughly all surfaces and dampen before the following treatment.

2. Apply as a brush coat a mixture made from—

- 1 volume of Cement
- 2 volumes of Water
- 6 volumes of Flintkote, at the rate of 2 gallons per 100 sq. ft., over the angle and 9 in. up the wall and 9 in. over the base of the floor.

3. Into this coat, when it is still wet, press an open mesh hessian membrane (7 oz. grade) which has been previously shrunk in water and wrung out.

4. Over this apply an additional trowel coat as in 2 above.

**FLOORS AND WALLS.**—1. Clean all surfaces and damp before commencing the following treatment. Treat the walls first.

2. Trowel on a mixture made from—

- 1 volume of Cement
- 2 volumes of Water
- 6 volumes of Flintkote at the rate of 3 gallons per 100 sq. ft.

When the concrete has dried out, pour the top layer of concrete, which must not be less than 3 in. in thickness. Particular care must be taken not to damage the Flintkote. Concrete is preferable to a built up brick wall as better support for the hessian film is obtained.

**EXISTING STRUCTURES—BELOW GROUND—EXTERIOR VERTICAL LAYER.**—When practicable, waterproofing of the walls can be most simply achieved by—

1. Clean down with wire brushes the exposed vertical face.

2. Apply a priming coat of—

- 1 volume of Cement
- 3 volumes of Water
- 6 volumes of Flintkote, at the rate of 1 gallon per 100 sq. ft.

3. When priming coat is dry trowel on a mixture of—

- 1 volume of Cement
- 2 volumes of Water
- 2 volumes of Flintkote
- 2 volumes of Sand, at the rate of 2 gallons per 100 sq. ft.

4. Carefully back fill with dry sand against the Flintkote surface or preferably, apply a thin layer of rendering to protect the waterproof coating from injury.

**ABOVE GROUND—EXTERIOR VERTICAL LAYER.**—

1. Clean the surface thoroughly with wire brushes.

2. Apply a priming coat of Flintkote diluted with 10% of clean cold water, at the rate of 1 gallon per 100 sq. ft.

3. Any cracks should be cut out and filled with the cement, Flintkote and sand mixture specified in 3 above.

4. Apply a finishing coat of undiluted Flintkote at the rate of 2 gallons per 100 sq. ft.
5. The surface may be coated with an approved white enamel if the black colour is undesirable. (Do not use lead paint.)



## FLINTKOTE FLOORS

- Will not ripple under the heaviest trucking with narrow steel tyres
- Save maintenance on rolling stock due to resiliency
- Protect concrete base against spalling of joints and damage through the dropping of heavy weights
- Are noiseless, dustless, less fatiguing, and non-slippery even when wet

## REPAIRS TO CONCRETE FLOORS

Sweep the area free from oil dust and clean out large cracks or depressions. Petrol or kerosene must not be used in an endeavour to remove oil or grease, which must be removed by wire brushing.

If the concrete surface is inclined to be porous and absorb water, an initial anti-suction coat of FLINTKOTE diluted with 50% by volume of water, should first be applied at 1 gallon per 100 sq. ft.

All pits, cracks and depressions should then be treated—

- Paint depressions, etc., with a priming coat of Flintkote diluted with 10% clean cold water and extending two inches beyond outside edge and allow to dry.
- Make a mix—Cement, 1 volume, Flintkote, 2 volumes, clean sand, 4 volumes—by adding the cement to dry sand, mixing to give uniformity and then adding in a little water (about a half volume), then the FLINTKOTE, and finally adding more water if necessary to give a trowelling consistency.
- Pack cracks or depressions with this mixture, which can be worked out to a feather edge, but no over lapping of the primer coat must occur. The centre of depressions should be left proud to allow for slight subsidence during setting up.
- Keep traffic off the patch for 48 hours.

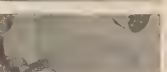
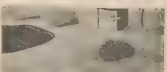
## UNDERLAYING FOR LINOLEUM or RUBBER MATTING

An ideal, resilient and sound-deadening underlayer to which can be cemented floor coverings, can be prepared with FLINTKOTE. Such underlayers are suitable in all types of buildings, including industrial plants, and for ship alleyways and in such cases. This mastic can be laid in thin as well as thick depths—from feather edge to several inches deep—and has the advantages—

- Elimination of the necessity for a fine trowelled finish on a concrete structural floor, as with proper depth allowance the mastic is placed over the floated surface of the concrete and any small irregularities are taken up by the mastic underlayer.
- A warm, resilient and jointless base can be made over a cold, concrete surface.
- Earlier laying of linoleum, etc., can be carried out as the mastic has a shorter curing period than cement rendering.
- For concrete slab floors at ground level, the underlayer seals off dampness which is caused by capillary attraction, and thus precludes attack by moisture upon the adhesive or covering material itself.
- It will not corrode metal pipes.
- The real danger of efflorescence being split on a concrete base, which is a possibility when other types of flooring are being laid, and thus corroding reinforcement is eliminated.
- It can be used with perfect safety for bathroom floors and in those cases where water may occasionally be spilt on the covering material.

The base must be cleaned, holes or depressions deeper than twice the thickness of underlayer to be laid are to be primed, filled with mastic, and then the whole area primed with diluted FLINTKOTE. The following mix is then to be trowelled into position—

Cement	.....	2	volumes
Water glass	.....	1	"
FLINTKOTE	.....	2	"
Clean, Well graded Sand	.....	13	"
Granulated Cork (1/2" size)	.....	5	"



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## REFRIGERATION



Meat Freezing Chamber at Fish Market, Melbourne.  
Application of Belknap's Seal.



R.N. Bond, Mechanical Refrigeration Plant, Application  
of duck coating on roof of refrigeration machinery  
house.



Isolation in Freezing Chambers at Sheepskin Cannery  
is Waterproofed and Protected by Pinkote.

**Meat Storage.**—Wine, Aust. Meat Export Co., Robes, Victoria.

**Egg Pulp Freezers.**—Food Control Board, Botolph Claydon, Norfolk, Eng.

**Fish Storage.**—Margate Fish Storage Co., Hobart.

**Fruit Storage.**—Anderson, Conner & Co., Moorabie, Victoria.

The construction of a refrigeration chamber involves the building of the external walls, floor and ceiling, lining the inside surfaces with an impervious moisture-proof film of bitumen, fixing slabs of insulation material in place and, finally, protecting this exposed internal face with another bituminous layer. This latter layer must be sufficiently robust to withstand abrasion on the walls, while the floor may in addition have to be provided with a wearing surface suitable for the traffic to be encountered.

This insulation material is truly completely enclosed within a moisture-proof envelope or vapour barrier. The reason for this external envelope is to prevent infiltration of water vapour from the outside atmosphere, for which there would be a tendency owing to a lower vapour pressure existing on the inside surface when the chamber is in service. The internal porous non rigid lining also provides a smooth surface which can be painted white.

### VAPOUR BARRIER

After rendering the internal surface of the construction wet and rearing, apply a priming coat of Pinkote Bitumastic Emulsion diluted with 10% cold water or one of 1 gallon per 100 sq. ft., and allow to dry for 24 hours. Then trowel on undiluted Pinkote at rate of 2 gallons per 100 sq. ft. and allow to dry out completely for some days.

### BONDING CORK SLABS

**WALLS.**—Dip one side of first layer of cork slabs in hot R.85/25 Mespahite Bitumen and immediately press in position. Wearing into position is also advisable. Subsequent layers are held in place by wooden skewers. All joints to be staggered. The last layer must have the face to be exposed dipped with hot Bitumen and excess removed, this cover is then cemented in place by dipping the other side of the slab in hot Bitumen. All open joints, etc., on exposed surface are to be caulked after priming with Pinkote diluted with 10% water with a mix made of:

Cement . . . . . 1 volume  
Water . . . . . (approx.) 1  
Pinkote . . . . . 1  
Granulated Cork  $\frac{1}{2}$ " size

If walls are liable to abrasion, apply diluted Pinkote as a primer and then trowel on a  $\frac{1}{2}$ " depth of mix made from:

Cement . . . . . 1  
Water . . . . . (approx.) 1  
Pinkote . . . . . 1  
Fine clean washed sand . . . . .

**CEILING.**—Apply cork slabs as for walls and secure in position. Complete surfacing by caulking joints with Pinkote cork mix.

When walls and ceiling have completely dried out pour with an acidulous and mouldproof oil bound water paint for light reflection.

**FLOOR.**—Each course of slabs is laid in a flood-coat of hot R.85/25 Mespahite Bitumen and the final surface flooded with hot Bitumen.

A reinforced concrete wearing course shall be laid on a 3" sheet of waterproof building paper. Expansion joints are to be allowed for, back-filled with the above Pinkote-cork mix, and the wet surface covered with a 6" width  $\frac{1}{4}$ " depth of the following mix, feathered out on edges:—

Cement . . . . . 1  
Water . . . . . 1  
Pinkote . . . . . 1  
Fine clean washed sand . . . . .

A detailed specification will be gladly submitted on enquiry to the Sales Company of Australia Ltd.

# NEUCHATEL ASPHALTE COMPANY (A'asia) PTY. LTD.

(INCORPORATED IN N.S.W.)

## IMPORTERS OF NATURAL ROCK ASPHALTS AND BITUMENS

### Representatives at—

395 Collins Street, Melbourne.  
M.U.2900.  
75 Grenfell Street, Adelaide  
C.4770  
115 St. George's Terrace, Perth  
B.3318.  
10 Elizabeth Street, Hobart  
Phone 5452.  
10 Kenyon Street, Whistans,  
Brisbane. M.7172.

### ASPHALT AND INSULATION CONTRACTORS

HEAD OFFICE FOR AUSTRALIA AND NEW ZEALAND:

247 GEORGE STREET, SYDNEY

Telephone: B6494

### Representatives at—

Halsey Street, Auckland, N.Z.  
Lambton Quay, Wellington, N.Z.  
37 Morehouse Avenue,  
Christchurch, N.Z.  
Crawford Street, Dunedin, N.Z.  
London Representatives:  
The Neuchatel Asphalte Co. Ltd.

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The term "Asphalt" includes a number of natural and manufactured products, the type commonly used in building construction being known as Mastic Asphalt.

Mastic asphalt may be laid vertically or horizontally and is a mixture of selected aggregates cemented with bitumen, combined in such proportions as to give a voidless and impermeable mass with plastic properties, which is applied by hand whilst in a hot fluid condition and manipulated into a continuous and jointless layer for waterproofing structures and providing durable pavings of special properties. Mastic asphalt should comply with British Standard Specifications, and it is generally acknowledged that native asphalts are essential ingredients for highest quality mastic asphalts.

Neuchatel Mastic Asphalt is manufactured from:

- (a) Natural asphalt rock, exclusively impregnated with bitumen by nature, the principal sources of supply being the Val de Travers mines in Neuchatel, Switzerland, and mines at Seyssel, in France.
- (b) Natural lake bitumen from the Island of Trinidad, British West Indies

To which is added a varying percentage of selected aggregates according to the class and character of the asphalt employed

## NEUCHATEL MASTIC ASPHALT IS UNAFFECTED BY SUB-SOIL WATER NORMALLY CORRODING CONCRETE, AND IS NON-INFLAMMABLE

THE BRITISH BUILDING RESEARCH STATION, IN SPECIAL REPORT No. 26, STATES—

"Quite apart from their impermeability to water, suitably compounded asphalt mastic exhibit properties which specially commend them . . . easily manipulated into a continuous and jointless layer . . . they do not become entirely rigid, but remain capable of flowing under small loads without loss of coherence. This is an important property of the material, for even in the best designed buildings it is impossible to eliminate small relative movements of members of the structure on account of such factors as settlement resulting from consolidation of the sub-soil, changes of temperature, shrinkage, warping, etc. Whereas such differential movements would tend to produce cracks in more rigid coatings, the "flow" properties of asphalt roofing mastics enable them to conform to such movements and thus to maintain intact a continuous unbroken waterproof surface. Finally, good class roofing mastics retain their impermeability to water and their power of accommodation to structural movements over long periods." . . . . . It would appear to be the safest policy to use only mastics prepared from naturally occurring materials of approved origin."

**WORKMANSHIP.**—The laying of mastic asphalt is a specialised construction and for satisfactory work only reputable firms employing specialist labour should be employed.

**FOUNDATIONS.**—Any brick, concrete, well-seasoned timber or other material that provides a firm, stable and clean base is suitable for a foundation.

## TABLE OF PRINCIPAL CLASSES OF MASTIC ASPHALT WORK

**ROOF COVERING.**—Over concrete, timber or other firm and stable base.

Including: those subject to traffic as sun decks, etc., and parapets.

Embossing: skirting, lining to gutters and outlets.

**DAMP PROOFING.**—Ordinary dampcourse: horizontal and vertical.

In buildings above and below ground level.  
In engineering on railway bridges and works.

**WATERPROOFING.**—"Tanking" foundations below ground water level (usually subjected to water pressure), applied in three coats and protected by brick work or concrete.

**INTERNAL LININGS.**—Reservoirs, water towers tanks for steam and cold water. In connection with industrial processes. Tanks containing non-corrosive or corrosive liquids at low or high temperatures in brine storage tanks for food storage chambers. Batching and dissolving vats, molasses tanks and developing baths.

**PAVINGS.**—Areas, platforms, wharves, etc., and on roads and footpaths.

**FLOORINGS.**—In industrial buildings subject to light, medium, heavy or special forms of traffic, particularly where

processes demand absence of dust and/or impermeable surface. Rigorous chambers, loading platforms, abutments, etc. on sagging floors, wood floors and innards skin floors, etc. Coloured in various types of decorative finish. Special forms, e.g. reinforced with steel mesh for heavy duty, etc., as a lining in explosives factories.

As an underlay for other finishes, as lacquer, cork or rubber.

**ACID RESISTING.** Mastic specifications are available for—Inorganic acids up to high concentration and/or temperature. Phishing factory floors.

Alkalies, solid or liquid.

A limited range of organic acids.

**SUBSTRATES.**

Breasting, girders, etc.

Complex shapes for precious metal refining and chemical processes.

Milk and certain associated substances.

Resistance to grease.

**OTHER USES.** Expansion joints, jointing of concrete or metal pipes. In connection with certain forms of electrical work. Road surfacing, and in structures for attenuating transmission of vibration.

RAMSAY'S CATALOGUE

# SPECIFICATIONS FOR MASTIC ASPHALT WORK

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It cannot be over-emphasized that in view of the various ways in which material can be made and described as "asphalt", every effort should be taken to ensure that competitive tenders are on a comparable basis; in other words, that the contractors are in fact quoting for the same class of material.

**TO SPECIFY**—An asphalt blocks used on the work shall be composed of Neuchâtel Natural Rock Asphalt. The added materials shall be as Trinidad Native Lake bitumen and selected mineral aggregate. The mastic asphalt shall be heated in kettles and mixed in proportions suitable for the particular application.

The hot mastic asphalt shall be applied . . . . . on per . . . . .

## RECOMMENDATIONS TO RESIST DAMP.

Vertical work 1 in. thick in three coats, each breaking joint.  
Horizontal work 1 in. thick in two coats, each breaking joint.  
Apply angle fillets in two coats to all junctions of horizontal and vertical work and internal angles of vertical work.

## TO RESIST WATER PRESSURE.

Vertical work 1 in. thick in three coats, each breaking joint.  
Horizontal work 1 in. thick in two coats, each breaking joint.  
Apply angle fillets in two coats to all junctions of horizontal and vertical work and internal angles of vertical work.  
The builder shall protect the asphalt by the application of bedding coats immediately each section of the work is completed.

# INSULATION IS A NECESSITY FOR MODERN BUILDINGS

**THERMAL MOVEMENTS.**—A flat roof receives solar radiation at more nearly normal incidence than any other part of a building, and in consequence heats up more rapidly. The ensuing movements have been known to cause structural damage. By applying insulation, temperature reduction from 1123 deg. to 73 deg. Fahr. has been measured.

**AIR-CONDITIONING** demands minimum transfer of heat through the roof.

**THERMAL CAPACITY** can be obtained by placing insulation over fibro ceilings of dwellings with hip roofs, and by adding insulation to the exterior of a flat roof.

# UNIFIL INSULATION—FOR HEAT AND SOUND CORRECTION EFFICIENT FROM SUB-ZERO TO 2000 DEGREES FAHR.

UNIFIL is an inert, featherweight, granular substance manufactured by exploding a rare non-metallic ore, known as Vermiculite. Unifil is fireproof, waterproof, termite proof, odourless, and will not attract vermin. A non-conductor of electricity, it is chemically inert and will not react with any substance in contact with it. Unifil is not unpleasant to handle and is a stable product which will not disintegrate into fine deleterious powder. It weighs approximately 7 lbs. per cubic foot. The **THERMAL CONDUCTIVITY** determined by hot plate is 0.286 at a mean temperature of 36 deg. F.

# UNIFIL AGGREGATE IS AVAILABLE IN THE FOLLOWING FORMS

**UNIFIL granules** for insulating buildings, stoves, ovens and furnaces for temperatures to 1400 deg. F. and for refrigerators. We would be pleased to inform you of some recent installations in furnaces, ovens and cold stores.

**UNIFIL CONCRETE** is composed of Unifil aggregate bonded with cement to form lightweight insulating concrete. Suitable for building construction where **HIGH INSULATION**, **STRENGTH**, **SOUND DEADENING** VALUE and **LIGHT WEIGHT** material is required. Unifil concrete can be made with a **THERMAL CONDUCTIVITY** of 0.08 and a **NOISE REDUCTION COEFFICIENT** of 0.92 for 1 in. thickness.

**TO SPECIFY** Unifil concrete shall consist of a mixture of parts Unifil granules and parts Portland cement, laid to a finished thickness of . . . . . inches when compared to a density of . . . . . lbs. per cubic foot.

## AIRLITE INSULATED ROOFING BLOCKS

**TO EXCLUDE SOLAR HEAT AND AID AIR CONDITIONING** Airlite blocks comprise a "Unifil" insulation concrete with a specially waterproofed cement topping and 2 or 2 1/2 inches thickness. For roofing purposes the blocks are laid over the usual membrane which waterproofs the roof.

As used on Raffles Hotel, Singapore, G.P.O. extension, Yarnala Hospital, Sydney, The New Leamings Hotel, Brisbane, and St. Lucia Hospital, Brisbane.

**TO SPECIFY**—A Neuchâtel mastic asphalt membrane and turn-ups as for roof.

Over the waterproofing membrane, supply and fix 24 in. x 4 in. x 2 1/2 in. Airlite insulated roof blocks, all bedded on a 1 in. cement mortar.

All joints to be poured with Trinidad Native Lake Bitumen to within 1/2 in. of surface and the remaining jointing to be filled with cement mortar or other protective finish.

Cove to height of finishing with Unifil concrete and cement.

plate and keep the water level below the lowest level of the asphalt application until the binding construction is sufficiently strong to withstand the water pressure which will develop.

**FLAT ROOFING OVER WOOD OR CONCRETE.**—On Kraft or underlay membrane, one inch thickness laid in two coats breaking joint over prepared existing roof grades.

For such cove to walls let 3 inch into chase provided with outlet to outside provide for rain watered junction to eaves.

Provide minimum grade of 1/4 inches each 10 feet of base for drainage.

Provide flashing to eave and metal collars to pipe and up-stands through waterproofing, all dressed down over asphalt cove.

On timber roof provide key for asphalt on slopes and at angle junctions with horizontal.

**NOTE.** An angle epoxy makes a better cove finish than a hot mastic type with fillet.

## PAVING.

Normal foot traffic, one inch thickness in one coat.

Passenger loading platform, 1 1/2 in. to 2 in. in one coat.

Refrigerated floors, one

Curb, 1 1/2 in. to 2 in. in two coats.

Wood or concrete, 1 in. or 1 1/2 in.

marble topping, with joints marked to conform with roof blocks.

## SOUND CORRECTION PRODUCTS

**ACUSTILE**, a fireproof, waterproof product, which will not attract vermin. Manufactured in tiles in sizes to conform with architect's design. The calculated **SOUND ABSORPTION COEFFICIENT** of Acustile 1 1/2 in. thickness is 0.70. As used in the Metropolitan Water, Sewerage and Drainage Board, N.Y., and the Bank of New South Wales, O'Connell Street, Sydney.

**ACUSTIC PLASTER.** A gypsum binder with Unifil aggregate to give a high tensile strength plaster of 24 lbs. per sq. inch in thickness, having a **SOUND ABSORPTION COEFFICIENT** of 0.80 and a low heat conductivity value. It is then covered the weight of ordinary plaster, it is **FIRE PROOF**, **ECONOMICAL** and **ADAPTABLE TO ALMOST EVERY TYPE OF ARCHITECTURAL TREATMENT—APPLY IT LIKE ORDINARY PLASTER.**

As used in Rio Theatre, Lane Cove, Sydney, and other places.

## HEAT CORRECTION PRODUCTS

**AN-PLASTIC** is a fireproof, waterproof product, which will not attract vermin. Manufactured in tiles in sizes to conform with architect's design. The calculated **SOUND ABSORPTION COEFFICIENT** of An-Plastic 1 1/2 in. thickness is 0.70. As used in the Metropolitan Water, Sewerage and Drainage Board, N.Y., and the Bank of New South Wales, O'Connell Street, Sydney.

**ACUSTIC PLASTER.** A gypsum binder with Unifil aggregate to give a high tensile strength plaster of 24 lbs. per sq. inch in thickness, having a **SOUND ABSORPTION COEFFICIENT** of 0.80 and a low heat conductivity value. It is then covered the weight of ordinary plaster, it is **FIRE PROOF**, **ECONOMICAL** and **ADAPTABLE TO ALMOST EVERY TYPE OF ARCHITECTURAL TREATMENT—APPLY IT LIKE ORDINARY PLASTER.**

As used in Rio Theatre, Lane Cove, Sydney, and other places.

Our Expert Advice is Yours for the Asking

NEUCHÂTEL ASPHALTE COMPANY (A/asia) PTY. LTD.

MANAGER CATALOGUE



Trucking Isle. Flintkote trucking isle, laid after failure of original concrete surface, subject to heavy trucking of tin plate at Southern Can Co., Footscray.

## ★ FLOORS ★

A heavy duty trucking surface is superimposed on a standard concrete base. It has been proved in our experience of this type of surfacing that Flintkote floor surfaces will withstand the heaviest wear and tear far more effectively than other types of flooring compositions. By modification to the mix proportions, these floors can also be rendered waterproof and acid proof.

Before recommending and quoting, each floor condition is surveyed specifically by our experts in order to choose the most suitable type of Flintkote specification for the job. Light weight, low conductivity surfaces are laid on ships and as underlayers to linoleum. Other floor coverings are also available incorporating cork aggregate.

**PLASTERS.** Flintkote plasters are waterproof and non cracking. This has been proved by laboratory tests conducted at temperatures down to 32° below freezing. These properties render Flintkote plasters particularly valuable in refrigeration insulation as internal finish on insulation layers. See photograph below.

★ Application of Flintkote plaster for Melbourne City Council at the Fish Market. These chambers operate at temperatures down to minus 20°F. and are used for shock freezing of fish.



# PICTON HOPKINS & SON PTY. LTD.

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## RECOMMENDED CONTRACTORS FOR THE

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## APPLICATION OF FLINTKOTE

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## FLOORS ROOFING INSULATION

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## WATERPROOFING AND CORROSION PROTECTION

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★ Flintkote is a product with a variety of applications ranging from corrosion protection to refrigeration insulation. Our staff are thoroughly experienced in all the phases of laying Flintkote, an experience which has been gained by over 7 years' close attention to the rigid laying technique demanded by this product. Flintkote is widely used with great success in Europe and America where huge areas of Flintkote Heavy Duty Mastic Flooring have been laid.

## ★ ROOFS ★

Flintkote waterproof treatment of flat roof areas is the most modern treatment of this type of roof areas. The waterproof membrane consists of successive applications of Flintkote cement mixes in conjunction with an open mesh fabric reinforcement. The laying of the fabric obviates the reproduction of contraction and expansion joints through to the surface in the form of surface cracks, which may become an avenue of leakage. On the waterproof membrane is imposed the wearing course, which may take the form of Flintkote-sand cement surfacing, a lightweight concrete course laid in situ or some form of pre-cast insulating tile. Once laid, Flintkote flat roof treatments require negligible maintenance.

**EXPANSION JOINTING.**—Flintkote cork mastic forms the ideal expansion jointing. Careful treatment of expansion joints is vital in situations of widely varying temperature extremes, for example, roof areas and floors subject to varying temperatures, such as locations adjacent to furnaces and ovens.

★ A lightweight, water-proofing, wearing surface, protecting the insulation layer on the roof of the crew's quarters of the M.V. "Wanganella."

130 CHURCH ST.



RICHMOND  
VICTORIA

Telephone JA2169



RAMSAY & CATALOGUE

# RUBANIT CHEMICAL COMPANY

256-258 CITY ROAD, SOUTH MELBOURNE

Telephone: MX1978

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ADLAIDE REPRESENTATIVE:  
C. P. DETMOLD,  
172 Flinders Street, Adelaide, S.A.  
Telephone: Central 5035.

PERTH REPRESENTATIVE  
W. H. EVANS LTD.,  
115 St. George's Terrace, Perth, W.A.  
Telephone: R 3513; G 9944.

Manufacturers of

## "AQUASTOP" BITUMINOUS PRODUCTS

### "AQUASTOP" and "RUBANIT"

#### Bituminous Roofings

Made from highest grade felt and best grade bitumen. "AQUASTOP" and "RUBANIT" Bituminous Roofing will not affect drinking water and is flame, acid and vermin proof. Its mica finish gives it outstanding heat insulating properties. Most effective for flat or pitched roofs on properties. Most effective for flat or pitched roofs on concrete, wood, or old galvanised iron.

Rolls are 3 ft. wide by 72 ft. long—216 sq. ft.

Available in 1-ply, 2-ply, 3-ply and 5-ply.

### "AQUASTOP"

#### Aluminium Roofing

Aluminium combined with bituminous felt makes a high quality roll roofing. The aluminium serves a triple purpose:

- (a) 100 per cent. waterproof.
- (b) Excellent heat insulator (reflects the sun's rays).
- (c) Protects the bituminous felt, thus giving a permanent job, which does not need painting.

Rolls are 3 ft. wide and 72 ft. long—216 sq. ft.

### "AQUASTOP"

#### Saturated Sarking Felt

Made from the highest grade felt and the best grade bitumen for sarking of tiled, slate and iron roofs, also for insulation and lining of walls, ceilings and floors.

Rolls are 3 ft. wide and 168 ft. long—504 sq. ft.

Available in the following weights—Light, Medium, Heavy and Extra Heavy.

### "AQUASTOP"

#### Building Paper

"AQUASTOP" Bitumen Saturated Sarking Felt Medium and the "AQUASTOP" Bitumen Core Paper No. 50 are used extensively with satisfaction as a building paper.

"AQUASTOP" Saturated Sarking Felt.

Medium Weight.

Rolls are 3 ft. wide and 168 ft. long—504 sq. ft.

"AQUASTOP" Bitumen Core Paper No. 50.

Rolls are 3 ft. or 6 ft. wide and 300 ft. long—i.e., 900 or 1,800 sq. ft.

### "AQUASTOP"

#### Bitumen Dampcourse

Made from the highest grade felt and the best grade bitumen. Unaffected by lime and cement.

Rolls are 72 ft. long and available in the following widths: 36 in. wide, 18 in. wide, 9 in. wide, 4½ in. wide.

### "AQUASTOP"

#### Building Board

For ceilings and interior walls. Time and labour saving, easy to handle. The "AQUASTOP" Building Board has outstanding heat and sound insulating properties, is waterproof, and has a very attractive finish, which does not need painting or kalsomining.

Obtainable in rolls 3 ft. and 6 ft. wide and 180 ft. long.

### "AQUASTOP"

#### Bituminous Flooring

"AQUASTOP" Bituminous Flooring may be laid direct on concrete, brick or wooden flooring in offices and factories. Bituminous flooring offers protection against dampness and insulation from cold. It is easy on the feet, flexible and hard wearing.

Available in rolls 3 ft. wide and 72 ft. long—216 sq. ft.

### "AQUASTOP"

#### Bitumen Core, Cushion Felt and Lino Underlay

This is used extensively as a carpet or lino underlay. Insulates against dampness and cold. Will level off uneven floors, thus protecting and giving longer life to floor coverings. Being waterproof and damp-proof, it makes rooms healthier.

Rolls are 6 ft. wide and 150 ft. long—900 sq. ft.

Available in two thicknesses—No. 100, No. 200.

#### ROOF SERVICE

We are equipped to undertake the erection or repair of any roofing which involves the use of our products.

Our advice on technical matters is available to clients at all times

**"AQUASTOP"**

**Bitumen Core Papers**

Made from the highest grade kraft paper and best grade bitumen. Bitumen laminated paper is used very extensively as a waterproof packing paper and for case linings, bags and envelopes. "AQUASTOP" Bitumen Core Paper should be used whenever it is necessary to protect a product from dampness, humidity, damage and impurity during transportation and storage, or whenever it is necessary to keep a certain amount of moisture inside the package.

No. 32, No. 50 and Crepe.

Available in standard rolls as follows: No. 32, 2 ft., 3 ft., 4 ft. or 6 ft. wide and 600 ft. long, and Nos. 50 and Crepe 2 ft., 3 ft., 4 ft. or 6 ft. wide and 300 ft. long.

For special needs we could supply any width up to 6 ft. "AQUASTOP" Bitumen Core Papers are available also in bag reels up to 30 in. diameter, or in sheets cut to your exact requirements.

**"AQUASTOP"**

**Hessian Centre**

An extra strong material for many purposes. Extensively used in the building trade, also as a packing material.

Suitable for farmers for covering haystacks, etc.

**CASE LININGS AND BAGS**

For protecting all sorts of commodities, we supply pre-fabricated case linings to fit your standard cases, which need only to be sealed at the top. Prices on application. Inside measurement necessary.

We also supply machine-made bags of all sizes made from our "AQUASTOP" Bitumen Core Paper.

**"AQUASTOP" BITUMINOUS COMPOUNDS, Etc.**

**"AQUASTOP"**

**Integral Waterproofing Compound**

For waterproofing concrete, cement, mortar, lime mortar, cement lime, rendering, and all masonry.

"AQUASTOP" INTEGRAL WATERPROOFING COMPOUND is scientifically prepared and University Tested.

A mortar containing "AQUASTOP" Compound was submitted to a pressure of 250 feet of water for 48 hours, but not the slightest penetration of water could be observed, while the same mortar, without "AQUASTOP" Compound, let water through at low pressure. See Melbourne University Test Report, dated 1/4/41. "AQUASTOP" Compound does not lower the strength of the mortar, but actually increases it by approximately 7 per cent. See Melbourne University Test Report of 2 3/41 on compression tests.

**Galvanised Tacks**

Specially made for nailing down "AQUASTOP" Bituminous Roofing.

**"RUBANIT"**

**Bitumen Paint and Roof Coating**

Is anti-corrosive, waterproof, fume and acid proof, and will not affect drinking water. Suitable for all metal, wooden, brick or concrete surfaces.

**Bitumen Roofing Cement (Cold Application)**

For cementing bitumen roofing and floorings.

**Special Bitumen (Hot Application)**

In tins approximately 50 lbs. each.

**"RUBANIT"**

**Asbestos Plastic Compound**

A perfect sealing compound for repairing and waterproofing of iron, tile and concrete roofs, gutters, chimneys, wall windows, etc. Has a putty-like consistency.

**A Complete Set of Samples of our  
"AQUASTOP" and "RUBANIT" PRODUCTS  
will shortly be issued to recipients of this volume**





**BITUMINOUS  
ROOFING, Etc.**

SECTION

**11**

SECTION

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CATALOGUES 1 to 4

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# Service to Industry

## ROOF & BUILDING SERVICE PTY. LTD.

210 QUEEN STREET, BRISBANE, B.4091.

70 KING STREET, SYDNEY, B.K.191.

## SPECIALIZED BUILDING SERVICES PTY. LTD.

220 COLLINS STREET, MELBOURNE, Central 3973.

Specialists in ROOFING, WATERPROOFING, INSULATION  
INDUSTRIAL PAINTING and ANTICORROSIVE PROCESSING

Manufacturers of—Roofing Compounds, Caulking Putties and Bituminous Paints. Sealroof,  
Elasticote, Silverseal, Cellconcrete for Insulation.  
Agents for—Johns-Manville, International Corpn. Building Products, Industrial Metal Protectives Pty. Ltd.  
Contractors for—All the above Services and Materials.

### FLAT ROOFS

Illustrated is an Evershed Asbestos Built-up Roof paved with a  
promenade surface. There are over 40 standard specifications for  
J-M flat roofs. Always specify "Evershed" Asbestos Felt Built-up  
roofs. "Asbestos for Endurance" and the lowest upkeep cost. Every  
roof carries our service guarantee.

### Use Cellconcrete for

ROOF INSULATION AND GRADING—PERMANENT—ROT-  
PROOF—VERMIN-PROOF—SOLID—PROVIDING A POSITIVE  
RESISTANCE TO HEAT TRANSFER.

(See our insertion under "INSULATION")



A J-M Asbestos Built-up Roof.

### IRON ROOFS

SEALROOF ASBESTOS ROOFING COMPOUND. Com-  
pounded of asphalt and long staple asbestos, SEALROOF is a  
brush applied roofing with a ten-coat application at the labour cost  
of one. We maintain a staff of competent tradesmen for roof treat-  
ments with Sealroof Roofing Compound, which is obtainable in  
three colours and black. A concise report and recommendation for  
treatment will be furnished on request.

SPECIMEN SPECIFICATION.—Those sheets considered to be  
unfit for further use to be cut out and replaced with good quality  
material. Iron slabsheets pretreated with Elasticote Anti-corrosive  
Paint to be inserted at all doubtful laps. Buckled sheets to be dressed  
and all loose sheets secured with galvanized twisted roofing nails.  
All small holes and leaks to be stopped. The roof, including gutters  
and down pipes, to be cleaned and then given a heavy flowing coat of  
Sealroof Roofing Compound applied at the rate of 1 gallon per  
100 sq. ft.



Iron Roof Protection Spreading  
Sealroof Compound

### SILVERSEAL ROOFS

A roofing treatment combining Heat-reduction Anti-cor-  
rosive protection and Roof Waterproofing in one specification.  
Silverseal is applied by our modern spray painting methods.  
Our portable equipment may go anywhere. Silverseal provides  
ideal light reflection for interior work.



### SERVICE TO ARCHITECTS

Inspections carried out, reports, recommendations and specifications prepared without obligation—for flat roofs, iron  
roofs, both new and old—waterproofing, cold storage and industrial painting.

**SEALROOF IS ESTABLISHED THROUGHOUT AUSTRALIA**

# ORMONOID

11  
2



BITUMINOUS *Waterproofing* PRODUCTS

Manufactured in Australia by Modern Processes and Plant by

**ORMONOID ROOFING & ASPHALTS LTD.**

Head Office and Works: 39-43 MENTMORE AVENUE, WATERLOO, SYDNEY, N.S.W.

# ORMONOID

## BITUMINOUS WATERPROOFING PRODUCTS

HEAD OFFICE AND MAIN WORKS: 39-43 MENTMORE AVENUE, WATERLOO, N.S.W.

Telephone: FF2241 (5 lines)

### MANUFACTURERS & DISTRIBUTORS OF

- Roofings
- Floorings
- Dampcourses
- Building Papers
- Sarking Felts
- Asbestos Felts
- Insulation Felts
- Flooring Underlayers
- Dampax Waterproof Sheeting
- Expansion Jointing
- Duralast Plastic
- Paints
- Cement and Compound
- Asbestos Coating
- Silvershield
- Lastolux Coloured Floor Coating
- Bitumen Base Aluminium Compound

### BRANCH OFFICES & WORKS:

VICTORIA: 209 Latrobe Street, Melbourne, C.I. - - - - - Telephone: Central 2693  
 QUEENSLAND: 146 Mary Street, Brisbane. - - - - - Telephone: B 4290

### AGENTS:

WEST AUSTRALIA: J. D. Mooney, 38 Pier Street, Perth. - - - - - Telephone: B 3229  
 TASMANIA: Enslaw & Enslaw, 94 Liverpool Street, Hobart. - - - - - Telephone: 4756  
 SOUTH AUSTRALIA: McIlwain & Co. Ltd., 13 Waymouth Street, Adelaide. - - - - - Telephone: Central 4840

### DISTRIBUTORS AND REPRESENTATIVES:

DISTRIBUTORS: SOUTH AUSTRALIA: Colton, Palmer & Preston Limited, Currie Street, Adelaide. - Telephone: Central 3880  
 REPRESENTATIVES: A.C.T. R. E. Crapp, Leichhardt Street, Kingston, Canberra. - - - - - Telephone: Canberra 702  
 NORTH QUEENSLAND: E. J. Ashby, 31 Mitchell Street, North Ward, Townsville. - Telephone: 1682

### ORMONOID PRODUCTS

Products bearing the name Ormonoid are the result of many years constant research and improvement. Only the highest grade raw materials are used in their manufacture. Strictest supervision is maintained and only modern plant and modern processes are used, ensuring that all products are of uniformly high in quality.

Manufactured in Australia and extensively used by leading Architects and Builders. Ormonoid Products have given continuous satisfaction in dampings and constructions of all types throughout Australia for over a quarter of a century. Ormonoid Products conform to the requirements of Government Departments, Municipal Authorities, and Public Health Regulations.

PLEASE TURN PAGE FOR  
SPECIFICATIONS AND DATA



Grace Building, Sydney. Roofed with Ormonoid.



Port Authority Building, Melbourne. Roofed with Ormonoid.

### AUSTRALIA-WIDE SERVICE

ORMONOID ROOFING

ASPHALTS

## ROOFING

### MATERIALS

The detailed examination of multiple layer hot-top asphalt roofing in various parts of the world over a period of many years has proved conclusively the long-term service given by this type of roofing. In many instances, roofs are claimed to last 20 years or more, and have actually been 20 years service and are still good for many years ahead.

### ORMOND ROOFING

Ormond Roofing is made from the highest grade rag felts thoroughly impregnated with specially refined asphalt under scientifically regulated control. Ormond is in fact, solid and chemical proof and impervious to salt air. As an excellent non-conductor, it ensures an air-tight operation. It is also fireproof, and resists water, and is not affected by acids of roofs. Its surface is in rolls 36 in. x 10 ft. x 1/2 in. thick.

We give the following weights for ten years work, 44 lbs. per roll, 2 ft. x 10 ft., for ordinary conditions; 44 lbs. per roll, 2-ply, heavy, for extra work; 104 lbs. per roll, heavy, for heavy, for maximum results, 104 lbs. per roll.

These weights do not include cements and cement for fixing, which are packed inside each roll when ordered.

### APPLICATION

For maximum results the following minute specifications are recommended:

- (See Sketch No. 1)
  - Priming Coat "Ormond" Cement and Compound.
  - Mopping Hot Asphalt, high grade.
  - Layer "Ormond" 2 ply, best quality.
  - Mopping Hot Asphalt, high grade.
  - Layer "Ormond" 2 ply, best quality.
  - Layer "Ormond" 2 ply, best quality.
  - Finishing Layer Screened Gravel, bedded in heavy mopping of hot asphalt, high grade.
- (See Sketch No. 2).
  - Priming Coat "Ormond" Cement and Compound.
  - Mopping Hot Asphalt, high grade.
  - Layer "Ormond" 3 ply, best quality.
  - Mopping Hot Asphalt, high grade.
  - Layer "Ormond" 3 ply, best quality.
  - Mopping Hot Asphalt, high grade.
  - Layer "Ormond" 3 ply, best quality.
  - Preparation of Surface - Roof Slope 1/4 in. per foot, approximately 1 in 100.

1 in 100. Wood decking not less than 2 in. x 6 in. clamped and well nailed. Concrete surfaces clean, dry and evenly graded to gutters and outlets. Angle of pitch not less than 1 in. x 12 in.

### ON CONCRETE ROOFS

Asphalt for Moppings - Heated to 350 to 360 degrees F. and used in coatings of not less than 30 lbs. per 100 sq. ft. Ormond Roofing. Each layer is lapped one-third over each preceding layer, providing a finished 3-layer roof of such layer is needed, using not less than 100 lbs. per 100 sq. ft.

Gravel Finish. The final coating of hot asphalt, about 40 lbs. per 100 sq. ft. embedded, while hot, with 250 to 300 lbs. of clean screened (1 to 6 in.) gravel per 100 sq. ft.

Flashings. The flashings of hot asphalt, about 40 lbs. per 100 sq. ft. of damp course and 100 lbs. per 100 sq. ft. of the damp course is placed higher than the roof surface, and the roof surface is then and up the parapet similarly to that shown, and counter-flashed with metal built into the leakwork or flashings grooves, should be employed.

### ON WOOD ROOFS

The first layer of "Ormond" can be mopped on to decking with hot asphalt, or mopped on with large household tin snips spaced at 3 in. centres. The latter method should always be used where the roof will not have a ceiling underneath. The remainder roofing is as above.

### RECOMMENDATIONS

The gravel top finish is strongly recommended as it reflects the harmful actinic rays of the sun and prevents disintegration. Thus, Specification No. 1 with its laminated layers of "Ormond" sealed with hot asphalt and finished with gravel provides the utmost in roof protection against harmful sun rays and extreme weather conditions. When Specification No. 2 is used, a final coating of "Asphalite" paint provides an excellent protective and preservative medium. A priming coat of "Ormond" Cement and Compound to the concrete roof deck surface will always give improved results.

### ORMONOID CONCRETE PAVING

Ormonoid Concrete Paving is laid over concrete, and is suitable for all concrete purposes, namely:

- 1st. As the most efficient protective surface available, and
- 2nd. As a very attractive and durable surface.

As well as the above, Ormonoid Concrete Paving serves in no small degree as a fireproof surface.

The above paving is generally of the thickness of 2 1/2 in., or as per any specification required.

Ormonoid Concrete Paving is best poured in situ, and where possible poured into accurate sections of approximately 10 ft. x 10 ft. sections, with all joints between sections filled with bituminous asphalt. These 10 ft. x 10 ft. sections are then ground or smoothed to give a suitable smaller sections or patterns, as required. At gutters the paving is suitably formed, and a parapet walls it is covered up and finished neatly under flashings and, needless to say, jointed in sections as far as to conform with the roof piling.

We would specially recommend this as a perfection where a first class finish is required in a roof, and where long and maintenance free life is required.

As past our Company has supplied this material for many years and with this specification, and even though some of these roofs are now over 10 years old, we have not yet had an instance where a concrete surfaced roof, laid by our Company, has required any repair whatever.

Further details of the ORMONOID Concrete Paving specification will be supplied on application.

## FLOORING

### MATERIALS

### ORMONOID LASTOLEUM FLOORING

Specially recommended for floors subjected to heavy traffic. Pileless in appearance, damp proof, and hard wearing and economical. It is a fabric formed in itself a serviceable floor covering for wood or concrete floors, or in the lighter 1, 2 and 3 ply, it makes a flooring or protective under.

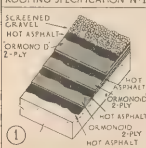
"Lastoleum" Flooring, deadens noise and will not disintegrate like linoleum when subjected to dampness. It wears 1 inch over 10 years.

Size - Rolls, 12 ft. x 3 ft. (cover 24 sq. yds.)

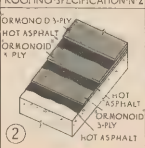
Weights Extra Heavy, 5 ply mica, smooth surface, 120 lbs. per roll. Red and Green, extra heavy, 100 lbs. per roll. Red and Green, medium, 85 lbs. per roll.

APPLICATION (see sketch No. 3) "Lastoleum" Flooring can be laid loosely or tacked like linoleum, but for best results it is recommended that a

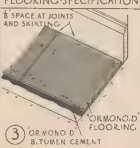
### ROOFING SPECIFICATION-Nº1



### ROOFING SPECIFICATION-Nº2



### FLOORING SPECIFICATION



## AUSTRALIA-WIDE SERVICE



can be cut easily with an ordinary knife and is not subject to rot or decay. For joint to hold or seal to steel without the use of wood underlayment. When used under Marlex tiles it is necessary to fit the battens in top of the felt in order to wire the tiles above the surface of the felt and avoid injury during winter.

In refrigerator and cold storage work, the high insulating value of "Oral" Saturated Felt makes this material an ideal material. Its moisture proofing qualities enable it to keep moisture content of walls down to a minimum and its non migrating properties in the presence of low temperatures is of much importance. It is definitely a superior.

#### TENSILE BUILDING PAPER

A building paper asphalt saturated felt through which forms a barrier against the passage of moisture dust and cold air. Used for many purposes where tough lightweight, insulating wall and floor linings are required.

Sizes—No. 2 in rolls 315 ft. 4 in x 2 ft. containing 1,000 sq. ft.  
Weight—45 lbs. per roll.

#### UNDERLAYERS

##### ORAL SARKING FELT

An extra heavy saturated felt made from superior wool and cotton, water proofed by high grade asphalt.

Sizes—No. 2 in rolls 315 ft. 4 in x 2 ft. containing 1,000 sq. ft.

Weight—45 lbs. per roll.

Uses—Sarking Felt is recommended for insulating, sound-proofing, and waterproofing at floors, walls, ceilings, under slabs, etc. where more

extra protection is required.

It is also used for sarking roofs and for sarking walls.

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## WATERPROOFING COMPOUNDS

### ORONOID CEMENT AND COMPOUND

This Bituminous Compound is of paint consistency, manufactured for general waterproofing purposes, for retreating, 'vied out and fully bituminous roofing covers, as an adhesive for setting all Oronoid Bituminous Roofings and Floorings, and as an anti-rust and anti-corrosion treatment.

Oronoid Cement and Compound is applied by brush direct from the tin, after stirring, and is ideally suited for the waterproofing of all porous surfaces and will arrest the actions of rust and corrosion on all metal surfaces such as iron, steel, tinware, etc.

The Compound is acid and fume proof and will not contaminate drinking water. Available in metal tins, from one pint to 48 gallon drums; in colours, Red, Black and Green.

### ORONOID ASBESTOTE

Oronoid "Asbestos" is a specially prepared bituminous compound incorporating asbestos fibres, which has been specially designed as a finishing coat to be applied over Oronoid Cement and Compound incorporating asbestos fibres, this compound will provide over any material treated with Oronoid Cement and Compound, a tough, durable and acid and fume proof surface. The protective actions of sun and weather, Oronoid "Asbestos" for Oronoid Cement and Compound, will not affect drinking water, in acid and fume proof, and is an ideal deterrent to rust and corrosion.

Available in metal tins, from one pint to 48 gallon drums; in colours, Red, Black and Green.

### ORONOID "SILVER SHIELD"

Oronoid "Silver Shield" is a bituminous compound, which has been specially prepared for the purpose of protecting metal surfaces from rust and corrosion. It is a bright and shining silver surface. "Silver Shield" is a recent innovation in the field of waterproofing compounds, designed to incorporate the well known properties of aluminium, together with the outstanding insulating properties of bituminous compounds. As is generally known, aluminium is an amazing insulator, and various governments and bodies have proved that bituminous aluminium compounds, when applied over a coat of a building compound, reduce temperatures by as much as 15 degrees.

This fact alone makes Oronoid "Silver Shield" an outstanding product and, when combined with all the other properties of bituminous compound, such as anti-rust, waterproofing, etc., it provides the ultimate in roof dressing as well as being an exceptionally versatile material purpose compound.

"Silver Shield" can be used as a general dressing to all types of surfaces, from small household fittings, such as pipes, etc., and small buildings, to concrete, and so on, up to large civil structures, such as bridges, gnomoniers, etc. "Silver Shield" will not contaminate drinking water.

Available in all size containers up to 48 gallon drums.

### CAULKING

#### DURASAL PLASTIC

A bitumen asbestos compound for stopping leaks, plugging cracks and holes and waterproofing shed flashings, chimneys, gasket walls, concrete paths, etc. and galvanised iron roofs, and brickwork. Recommended for use in place of coloured Portland cement in pointing up the roofs.

Colours—Red, Green and Black. In this ready for use. Used in a similar manner to putty. Fill directions on tin.

### JOINTING

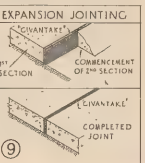
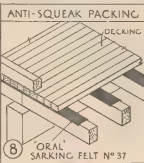
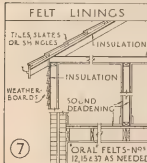
#### GIANTVANT ASPHALT EXPANSION JOINTING

Specially designed for the purpose of filling and expanding joints in concrete roads and pavements, for the purpose of maintaining water-tight joints in concrete roads and pavements. As supplied to, and in strict conformity with the specification of the Main Roads Boards. "Giantvante" Jointing is composed of a bitumen, with asphalt and oil on its base, which when set, is a tough, elastic body, it is designed to expand and contract with the concrete, in hot and cold weather, it is so strong as to be able to resist the action of the concrete in cracking and thus reduce maintenance.

Sizes—Made in any size and specification.

#### APPLICATION (see sketch No 9)

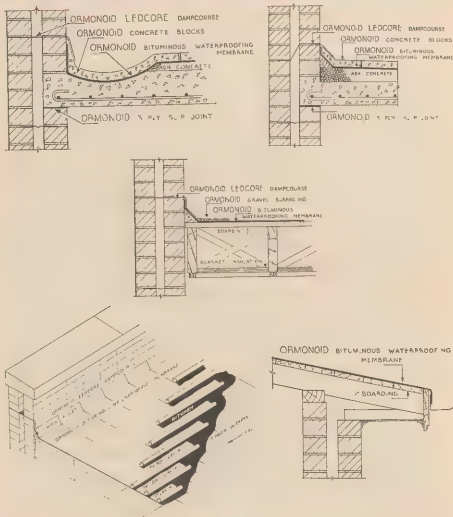
Application is simple, and the read construction is facilitated. The rigid form of "Giantvante" enables it to be placed at the end of each section of concrete immediately before the next section is poured. There is no trouble of removing the forms, priming the sides of concrete and heating of concrete, which is involved in most methods of compound expansion jointing.



## AUSTRALIA WIDE SERVICE

# ORMONOID

## DETAIL OF DAMPCOURSE AND FLASHING



AUSTRALIA-WIDE SERVICE

ORMONOID ROOFING



# PABCO PRODUCTS PTY. LTD.

MANUFACTURERS AND IMPORTERS

Malthoid Roofing, Mastive Floor Covering, Malthoid Dampcourse, Pabco Asphalt Saturated Felt, Pabco Building Paper, Double-Kraft Waterproofing Paper, Pabcoite Reinforced Fabric, Flostite, Hydrotite Caulking Compound, Waterproofing Paints and Compounds

**150 WIGAM ROAD, GLEBE**

MW 2424 (3 lines)

NOTE—Our new factory at the above address is the most modern and efficient in Australia. We shall be pleased to answer all inquiries by telephone or by post to the factory.

Victoria Representative G.P.O. Box 18452, Melbourne.

## MALTHOID SPECIFICATION ROOFS

Genuine Malthoid Roofing has been used throughout Australia by leading Architects and Engineers for 34 years, and has been selected for more prominent buildings throughout the Commonwealth than any other fabric.

Malthoid Roofing is manufactured in Australia under the strictest laboratory supervision, assur-

ing Architects of positive uniformity in waterproofness and maintained quality.

The blended coating used on Genuine Malthoid is composed of various grades of Floatine (a specially refined waterproofing Asphalt), and is only produced by one refinery in the world, who are the first commercial users of a refined pure petroleum Asphalt.

### Service to Architects

Waterproofing problems are many and varied. The manufacturers maintain a staff who have had long years of experience in waterproofing problems both here and abroad. The Application Agents of Malthoid Waterproofing Specifications have had years of experience in applying these specifications under normal and abnormal conditions. Practical assistance is offered to the profession by either of the two sources of specialised knowledge without any obligation to the architect, owner or contractor.



Malthoid Roofing—Selected to Waterproof the Roofs of David Jones Ltd. Store Sydney Stores

### Malthoid Standard Waterproofing Specifications

For Waterproofing Flat Roofs.

Specification "A" (No. 28)

1st layer: Genuine Malthoid Roofing 1-ply.

2nd layer: Flooded with hot Floatine.

3rd layer: Genuine Malthoid Roofing 2-ply.

4th layer: Flooded with hot Floatine.

5th layer: Genuine Malthoid Roofing 3-ply.

6th layer: Flooded with hot Floatine.

7th layer: Gravel embedded in Floatine.

Specification "B"

1st layer: Pabco Felt.

2nd layer: Flooded with hot Floatine.

3rd layer: Pabco Felt.

4th layer: Flooded with hot Floatine.

5th layer: Genuine Malthoid 3 ply.

6th layer: Flooded with hot Floatine.

7th layer: Gravel embedded in Floatine.

### Weights and Covering Capacities of Roofing Materials

Malthoid Roofing is made in four weights:

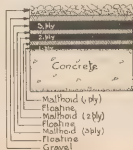
1-ply .. .. averages 64 lbs. per roll

2-ply .. .. averages 84 lbs. per roll

3-ply .. .. averages 104 lbs. per roll

5-ply (extra heavy) .. averages 124 lbs. per roll.

A roll of Malthoid is 3 feet wide and 72 feet long (containing 216 sq. ft.)



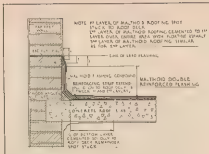
Specification "A" No. 28.

### Hydrotite Caulking Compound

For caulking sandstone, polished granite, terra cotta, glass bricks, architectural porcelain and steel frames, etc. Hydrotite is waterproof and will withstand for years the tremendous drying power of the Australian sun as well as the leaching action of stone and masonry.

Non-shrinking, ductile and stain resisting. It adheres firmly to the surface to which it is applied and seals it securely against infiltration of water. Hydrotite Caulking Compound is strongly recommended by Australian Window Glass Pty. Ltd. for caulking glass bricks.

WATKINS & CATSLEGGE



Malthoid Special Double Reinforced Flashing at Junction of Roof Deck and Wall.

### TYPICAL ROOFING AND FLOORING CONTRACTS CARRIED OUT IN MALTHOID AND MASTIPAVE

#### Floors:

Town Hall, Brisbane.  
Myer's Bulk Store, Melbourne  
David Jones Ltd., Sydney, three stores and factory.  
Raschel Forster Hospital, Sydney.  
St. Vincent's Hospital, Sydney.  
Orient Steamship Co., Sydney.  
Standard Telephones & Cables Building, Sydney.  
R.A.C.A. Building, Sydney.  
Port Jackson & Manly S.S. Co. Ltd. Ferries.  
Sydney Ferries Co. Show Boat.  
Incinerator Building, Newcastle.

#### Floors:

Sydney Hospital.  
Sydney Eye Hospital.  
Royal Prince Alfred Hospital, Sydney.  
New King George V Hospital.  
Masonic Hospital, Ashfield.  
David Jones Ltd., Sydney.  
Myer Emporium, Melbourne.  
Coles Stores, Sydney.  
Mockbells' Cafes, Sydney.  
Crown Crystal Glass, Sydney.  
Australian Glass Manufacturers Pty. Ltd.

### HYDROSEAL No. 559 WHITE PLASTIC

Designed for use as an over-elastic plastic where its colour makes it more suitable than No. 1007 Black. Can be painted over with oil paints. May be tinted with pure colours-in-oil. Thinned to brushing consistency with Raw Linseed Oil, it is used by paint contractors as a flow coat under Stucco Paint to fill hair line cracks. Embodying the use of high quality Asbestos, this Hydroseal provides a plastic which, because of its adaptability to being tinted on the job, makes it particularly suitable for work requiring some decorative treatment.

BAMSEY'S CATALOGUE

### PABCO ALUMICOOL

A newly developed high grade, multi-service aluminium coating with a bituminous base for application on any type of surface, including Malthoid Roofing. Heat-resistant, anti-corrosive, decorative, rust-inhibitive, insulating, reflects the sun's rays. When used on roofs reduces interior temperatures. Proof against sea air. Used as a roof coating deflects up to 75 per cent of the sun's rays. Reduces inside temperature by 20 deg. One gallon covers approximately 500 square feet—one coat.

### MASTIPAVE FLOOR COVERING

#### Red or Grey

A sturdy floor covering to protect every type of floor. Extra Heavy Mastipave wears much longer than linoleum on wood or concrete floors at a cost surprisingly low. You can replace frayed linoleum with this sturdy fabric. Mastipave is manufactured in Australia in rolls 3 ft. wide and 72 ft. long. Best results are obtained when Mastipave Floor Covering is laid over smooth boards or concrete without deep cracks.

### PABCO SUPERKRAFT

Pabco Superkraft is constructed of two sheets of heavy Kraft paper laminated with the finest grade bitumen, reinforced with a diamond mesh of sturdy jute threads. Reinforcing is supplemented with longitudinal threads giving Pabco Superkraft added strength. Pabco Superkraft is used for marking under tiles or iron, interior and exterior linings, and as a waterproof wrapping paper for case linings, and for fruit drying. Pabco Superkraft is manufactured in rolls 6 ft. wide by 200 ft. long.

### PABCO DOUBLE KRAFT WATERPROOF PAPER

Pabco Doublekraft Waterproof Paper is manufactured in two grades Standard Weight and Medium Weight. Pabco Standard Weight Doublekraft in rolls 3 ft. wide by 300 ft. long. Pabco Medium Weight Doublekraft in rolls 3 ft. wide by 166-2 3 ft. long. Pabco Doublekraft is a non reinforced waterproof paper strong and durable. It can be used successfully as a cheap waterproof wrapping paper, also for dust and draft proofing, etc.

### No. 2 P. & B. PRESERVATIVE COMPOSITION

No. 2 P. & B. Preservative Composition is a perfect anti-cyanide paint and is ideal for use around mines and freezing works, water tanks and septic tanks, underground timber, protection against dampness and on equipment such as iron making plants or others exposed to constant humidity.

No. 2 P. & B. Preservative Composition has very high insulating values, and is recommended for use around dynamo and motor bases, battery and accumulator shelving, circuit and switch-boards, ashore and at sea.

No. 2 P. & B. Preservative Composition is not recommended for outside use.

Covering capacity 200 sq. ft. per gal.—1 coat. Two coats are recommended.

### HYDROSEAL No. 6660 CLEAR WATERPROOFING

For application by brush or spray over brick, concrete, and asbestos fibre roofs. Contains liquid which is sucked into the brick, concrete, or fibre, penetrating all the pores, and then evaporates, leaving behind it, locked within the pores, an extremely high quality waterproofing composition. Sufficient coats of No. 6660 Hydroseal Clear Waterproofing are applied (carefully following our directions for use) until all the pores on all parts of the surface are filled with the waterproofing medium. This results in an impervious waterproofing, not merely lying on the surface, but drawn back of the surface and locked within the pores of the brick or concrete in a manner that ensures both long wear and waterproofness.

# GEORGE WARD PTY. LTD.

17 ORR STREET, CARLTON, N.3, VIC.

Telephones:

FJ6297 FJ4725

## Roofing Specialists and Contractors

### ROOFING SECURITY, PROTECTION and SERVICE

As the weakest link is to the strength of the chain, so is the general efficiency of the roof to the substantiality of the building.

The fact that a roof is designed for efficient and permanent protection to the whole building is not generally appreciated, and casual attention should not be considered a sufficient substitute for the necessary regular service essential to this important section of the structural security.

Adequate roof protection is the province of specialists.

This organisation has been established for many years, and the experience gained throughout that period has enabled it to develop and follow a regularly defined policy which, it has been found, is yielding maximum results.

A system has evolved under which the various and distinct phases of the work are classified and operated. Summarized under their respective headings, these are:—

#### 1. Inspection and Report

Before any concrete proposal can be submitted, the condition of the roof must be ascertained. This means that every roof must be carefully checked over, inspected and measured up. The inspection, whilst permitting the general condition of a roof to be known, must also allow for a careful check to ascertain the nature and extent of the repairs, replacements and adjustments which may be required.

#### 2. Nature and Extent of Work

To the extent disclosed, each roof, of necessity, requires first to be made a sound, serviceable unit. All necessary repairs must be done, and then the surface, be it iron or bitumen felt roofing, treated or dressed to protect it against further deterioration.

#### 3. Specification of Work

Every quotation contains an accurate specification setting out in detail the proposed work which is considered necessary. Thus, a client knows exactly what is being done and, what is perhaps more important, what he is paying for.

#### 4. Service

On the completion of the work, it is the usual practice to cover roofs repaired and treated with a Service Undertaking. This service briefly provides for the attending to and repair of any ordinary leaks and the making good of any defects which may be ascribed to faults in workmanship, over a definitely stated period, and is given free of any charge.

#### 5. Records

Full records are kept of all service given and, in addition, periodical inspections are made during the service period. On the expiry of the term of service, the roof is again carefully checked over and inspected, and a full report given of the condition, together with a quotation embodying the re-treating or re-dressing of the surface, and a specification of any repairs required.

#### Regularity of Attention.

A great majority of clients make it a policy to have their roofs kept in sound condition by having them regularly dealt with in this manner. Thus they are relieved of any worries concerning the condition of their roofs by placing them in the hands of those specially qualified to take care of them.

### FLAT BITUMINOUS FELT ROOFS

A prevailing idea exists in many quarters that this roof is not entirely satisfactory and that they constantly give trouble. This condemnation, which usually arises from lack of knowledge, should not be attributed to the type of roof itself, but to the reasons which cause it to be classed as unsatisfactory.

The main and most frequent reason is neglect, and experience has proved that subject to consistent attention (and this point must be emphasized) this type of roof can be kept a sound and serviceable unit for a lengthy period. Regular maintenance is, therefore, essential, and this course embracing a dressing of the surface should be effected at least every two years.

### ROOFING, WATERPROOFING AND CAULKING PRODUCTS

#### Roofcote Roofing Compound

A semi-plastic bitumen-asbestos compound for arresting the rust action and preserving galvanized iron roofs, gutters, etc.

#### Wardez

For dressing, reviving and waterproofing bitumen felt roofs.

#### Silvacote Aluminium Composition

A high-grade aluminium composition providing a tough, protective coat of long life and high resistance to moisture; is particularly suitable for the coating of exterior surfaces of iron roofs. Attractive in appearance, it combines heat reduction and preservation.

#### Primasil

A specially prepared bituminous anti-corrosive compound for use as a primer in conjunction with Silvacote.

#### Vulcatex

A non-hardening, non-staining, waterproof, plastic putty.

Vulcatex never sets hard; it always retains its elasticity. Vulcatex does not stain, and can be tinted with pigments to harmonise with the colour of the structural material. It will adhere tenaciously to any surface, and will expand and contract within the usual ranges of temperature. Is the ideal material for pointing up window frames, terra cotta and stone joints, and embedding all classes of glasswork.

#### Hornex Rubber Concrete

Hornex is a rubber compound, poured cold, and used for a thousand and one purposes. Among its many uses are: Contraction and expansion joints in concrete work, lining pools, reservoirs, etc.; fixing tiles to any surface; fastening all types of building boards; or wherever a permanently waterproof adhesive is required.

Associate Office—George Ward, 2 Buckland Street, Broadway, Sydney. Phone MA1518

SECTION

**12**

SECTION

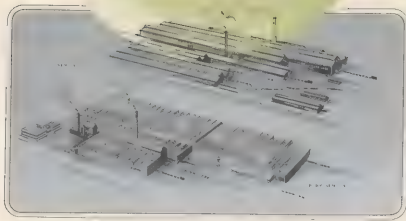
**SHEET METAL  
ROOFING**

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CATALOGUES 1 to 3

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# LYSAGHT'S DATA SHEETS



JOHN LYSAGHT (AUSTRALIA) PTY. LTD.

SYDNEY MELBOURNE BRISBANE ADELAIDE FREMANTLE

# LYSAGHTS DATA SHEETS OF ROOFING INFORMATION

To ascertain the area of roof covering necessary for a given pitch relative to the area of the plan, multiply the latter by the factor listed opposite the pitch required. Add for eaves.

The diagram shows the relationship between three methods of indicating the slope of a roof:  
(a) Number of degrees,  
(b) Rise and run ratio,  
(c) Fraction of one pitch.

Pitch of roof in degrees from horizontal.

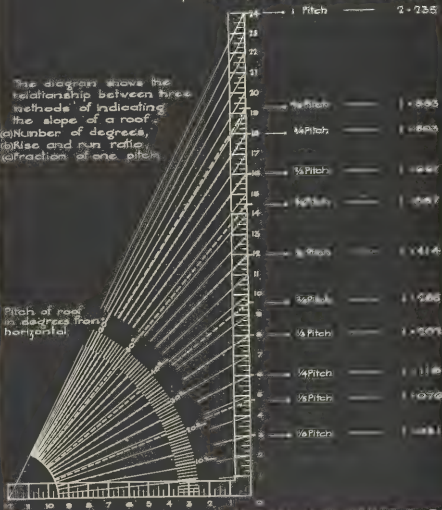


DIAGRAM SHOWING ROOF PITCHES AND OTHER DATA

## BLACK STEEL SHEET

## BIRMINGHAM GAUGE

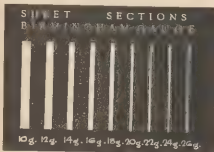
The standard gauge table used for Black Steel Sheets is known as the Birmingham Gauge or B.G. (not B.W.G.). It must not be confused with either the Birmingham Wire Gauge (B.W.G.) or the Standard Wire Gauge (S.W.G.). Wherever gauge (g) is used in these pages the B.G. is implied.

It is useful to remember that—

10g (B.G.) is  $\frac{1}{8}$  inch thick

16g (B.G.) is  $\frac{1}{4}$  inch thick

and that for every increase of 6 in the number of the gauge the thickness is reduced by a half.



## GAUGE TABLE

Gauge (B.G.)	Thickness in inches	Gauge (B.G.)	Thickness in inches	Gauge (B.G.)	Thickness in inches
8	.1570	16	.0625	24	.0247
9	.1398	17	.0556	25	.0220
10	.1250	18	.0490	26	.0196
11	.1113	19	.0440	27	.0174
12	.0991	20	.0392	28	.0156
13	.0882	21	.0349	29	.0139
14	.0785	22	.0312	30	.0123
15	.0699	23	.0278		

APPROXIMATE WEIGHT OF STOCK SIZES  
OF BLACK SHEETS IN LBS.

Thickness	24" x			24" x			24" x		
	24"	36"	48"	24"	36"	48"	24"	36"	48"
16	6.2	11.2	15.7	10.3	18.2	25.4	10.3	18.2	25.4
12	10.3	18.2	25.4	16.5	29.4	40.8	16.5	29.4	40.8
10	15.7	27.8	39.1	24.8	43.9	61.2	24.8	43.9	61.2
8	23.8	41.8	58.7	37.2	65.8	91.4	37.2	65.8	91.4
6	35.9	62.8	87.1	55.8	98.4	136.5	55.8	98.4	136.5
4	53.8	94.2	131.5	83.7	148.8	204.8	83.7	148.8	204.8
3	65.8	115.7	162.8	102.4	182.4	253.8	102.4	182.4	253.8
2	87.1	153.8	214.8	136.5	243.8	336.5	136.5	243.8	336.5
1	115.7	204.8	287.1	182.4	324.8	447.1	182.4	324.8	447.1

NOTE.—Special sizes can be supplied at an additional cost. In general, sheets can be provided up to 36 ins. wide with a maximum length of 12 ft., or 48 ins. wide with a maximum length of 10 ft.

## QUALITIES OF BLACK SHEET

## SUNSTAR

Sunstar is the standard sheet in use for a wide range of working up purposes. It is manufactured in three different types to meet the wide variety of applications for which this material is specially suitable.

SUNSTAR

C.R. C.A.

AUSTRALIA

This is the Standard quality C.R. C.A. (Cold Rolled, Close Annealed) sheet and covers the greater part of the demand for a versatile general purpose material for a wide variety of applications.

SUNSTAR

D.O.

AUSTRALIA

For special requirements where a scale-free surface is desirable in addition to the well-known properties of Sunstar C.R. C.A.

SUNSTAR

H.R.

AUSTRALIA

This quality is provided in the heavier gauges only and is particularly suitable for applications such as light structural work where a finer grained, slightly stiffer sheet which retains the ductile properties of Sunstar C.R. C.A. is desired.

## SOUTHERN CROSS

SOUTHERN

CROSS

AUSTRALIA

This blued sheet is designed to meet the demand for a material combining the well-known physical properties of Sunstar C.R. C.A. sheets with a surface suitable for fine finishes.

An outstanding characteristic of this quality is the surface provided by the uniform and tightly adherent oxide film, which affords considerable protection and is an excellent base for the application of decorative finishes.

APPROXIMATE SHEETS PER HALF TON  
STOCK SIZES

Gauges	24" x			24" x			24" x		
	24"	36"	48"	24"	36"	48"	24"	36"	48"
16	18	10	7	15	8	6	14	8	6
12	25	14	10	20	11	8	18	10	7
10	32	18	13	26	14	10	22	12	9
8	40	22	16	32	18	13	28	15	11
6	50	28	20	40	22	16	35	19	14
4	63	35	25	50	28	20	44	24	18
3	77	43	31	62	35	25	54	29	22
2	94	52	38	75	42	31	66	35	27
1	115	63	46	91	51	38	80	42	33
1/2	143	79	58	113	63	46	99	51	38
1/4	178	99	73	143	79	58	124	63	46
1/8	225	124	91	180	99	73	156	80	58
1/16	281	156	113	225	124	91	196	99	73
1/32	350	196	143	281	156	113	243	124	91
1/64	440	243	178	350	196	143	306	156	113
1/128	550	306	225	440	243	178	380	196	143

## GALVANIZED IRON AND ZINCANNEAL

## Details of Flat Sheets

12

I

## GALVANIZED SHEETS

Lysaght's galvanized sheets are the product of many years' experience and constant technical control and attention to quality.

The properties and coatings are specially adapted to meet the varied requirements of flat and corrugated sheets and conform to the appropriate classifications of Australian Standard Specification A20/1934.

## BRAND OF GALVANIZED FLAT SHEET



Lysaght's Queen's Head Quality Galvanized Flat Sheets are the most uniform and reliable plain galvanized sheet on the market, commanding the universal confidence of consumers.

## Data on 5 ft. Sheets, Galvanized or Zincanneal

Approximate number of 5 ft. sheets to a 10 cwt. case of Plain Iron.				
Gauge	Width			
	24 in.	30 in.	36 in.	48 in.
14	29	23	19	16
16	36	29	24	18
18	45	36	30	23
20	56	45	37	28
22	69	56	46	35
24	86	69	58	44
26	124	99	84	62

## Approximate weight per sheet in lbs.

Gauge	Width			
	24 in.	30 in.	36 in.	48 in.
14	59.7	49.6	59.3	79.0
16	31.7	39.6	47.4	63.2
18	25.3	31.6	37.9	50.4
20	20.3	25.4	30.5	40.4
22	16.3	20.3	24.4	32.5
24	13.1	16.3	19.6	26.1
26	10.5	13.2	15.8	21.0

## NOTES:

1. The thickness of the base steel sheet of both zincanneal and galvanized material of any gauge conforms in general with the B.G. black sheet of the same gauge number.
2. The weight of coating provided is controlled to suit the particular requirements of the various types of sheet and falls within the range of 1.5 to 2 ozs. per square foot.
3. All qualities are packed in cases containing approximately 10 cwt. of sheets.

RANSAY &amp; CATALOGUE

## ZINCANNEAL SHEETS

Lysaght's Zincanneal sheets are an outstanding development from the Company's long experience with galvanized coatings. In the process zinc is combined at high temperature with the steel base and transformed into a zinc-iron alloy which has remarkable properties.

The sheets are free from flaking and have excellent resistance to corrosion. The fine matte surface can be immediately painted without priming.

Zincanneal can be welded by any method, tinned, soldered or brazed.

## BRANDS OF ZINCANNEAL FLAT SHEET

LYSAGHT  
ZINCANNEAL  
AUSTRALIA  
R.L.

This quality is especially suited to and enjoys increasing popularity for duct work, flashing, gutters, downpipes, capping vents and formed work generally where a perfectly flat sheet is not necessary.

LYSAGHT  
ZINCANNEAL  
AUSTRALIA  
PANEL

These sheets are subjected to a final surface improvement process and finished dead flat. The surface provides an ideal base for baked enamels and similar fine finishes.

## Data on 8 ft. Sheets, Galvanized or Zincanneal

Approximate number of 8 ft. sheets to a 10 cwt. case of Plain Iron.				
Gauge	Width			
	24 in.	30 in.	36 in.	48 in.
14	22	17	15	11
16	27	22	18	14
18	34	27	23	17
20	42	34	28	21
22	52	42	35	26
24	65	51	44	33
26	92	74	63	46

## Approximate weight per sheet in lbs.

Gauge	Width			
	24 in.	30 in.	36 in.	48 in.
14	52.7	55.8	78.9	105.2
16	42.1	52.6	62.1	84.1
18	33.6	42.0	50.4	67.1
20	27.1	33.8	40.5	53.8
22	21.7	27.0	32.4	43.2
24	17.4	21.7	26.1	34.7
26	14.0	17.5	21.0	27.8

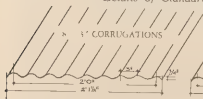


## GALVANIZED IRON AND ZINCANNEAL

Details of Standard Corrugated Sheets

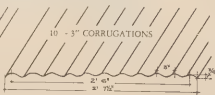
12

1



obtainable in 16 to 26 g  
and in lengths  
5'-0" to 12'-0"

S 1-512



obtainable in 16 to 26 g  
and in lengths  
5'-0" to 12'-0"



obtainable in 14 to 20 g  
and in lengths  
5'-0" to 12'-0"



obtainable in 26 gauge only  
and in lengths  
5'-0" to 10'-0"

## GALVANIZED CORRUGATED SHEETS

Lysaght's "Orb" Quality has been favourably known and recommended throughout the world since 1887 as a corrugated sheet of the highest quality. The perfection of galvanizing, the uniformity of gauge and corrugation is endorsed by universal specification. The properties and weights of coating are specially controlled to suit the wide range of applications of corrugated sheets and conform to the appropriate classification of Australian Standard Specification A20 1934.



This universally known sheet has a uniformly heavy zinc coating applied to a ductile steel base of the highest quality. It is particularly suitable for applications requiring curving.

LYSAGHT

(AUST.)

PTY. LTD.

SYDNEY

AUSTRALIA

S 1-512

S 1-512

S 1-512

S 1-512

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S 1-512

LYSAGHT  
ZINCANNEAL  
AUSTRALIA

This quality has the Zincanneal coating applied to a ductile steel base similar to Blue Orb and may be curved with ease.

LYSAGHT  
ZINCANNEAL  
AUSTRALIA

S 1-512

Red Orb sheets carry the same high grade coatings, but an especially hard sheet is used as a base. The extreme rigidity and stiffness specially recommends it for applications such as roofing or fencing where maximum strength is required. This quality is available in 24 and 26 gauge and is not suitable for curving.

This quality is similar in all respects to the Blue Zincanneal with the exception of the steel base. This, like the base used for Red Orb sheets, provides great rigidity and strength for structural applications such as roofing and fencing where these properties are of major importance. Red Zincanneal is available in 24 and 26 gauge and is not suitable for curving.

RAMBAY'S CATALOGUE

## GALVANIZED IRON AND ZINC ANNEAL

Data on Standard Corrugated Sheets

## STANDARD 19 x 3" CORRUGATIONS SHEET



## APPROXIMATE WEIGHT PER SHEET (LBS.)

Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	32.5	26.3	21.3	17.2	11.6
6	38.9	31.4	25.5	20.6	13.9
7	45.3	36.6	29.7	24.0	16.2
8	51.7	41.8	33.9	27.4	18.5
9	58.0	47.0	38.1	30.8	20.8
10	64.6	52.2	42.3	34.2	23.1
11	71.0	57.4	46.5	37.7	25.4
12	77.4	62.6	50.7	41.1	27.7

APPROXIMATE NUMBER OF SHEETS  
PER HALF TON CASE

Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	35	47	53	68	97
6	29	36	44	57	81
7	25	31	38	49	69
8	22	27	34	43	61
9	20	24	30	38	54
10	18	22	27	34	49
11	17	20	25	31	44
12	14	18	23	29	41

## COVERING CAPACITY PER TON

One ton of corrugated sheet with 6 in. end lap and 1 1/2 corrugations side lap has the following covering capacity

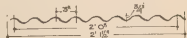
Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	137	910	1124	1392	2053
6	782	972	1148	1420	2105
7	763	945	1165	1441	2135
8	771	955	1177	1456	2157
9	780	962	1187	1468	2174
10	787	968	1195	1478	2188
11	787	972	1201	1482	2199
12	790	977	1206	1489	2209

## NOTES:

- The thickness of the base steel sheet of both zinc anneal and galvanized material of any gauge conforms in general with the B.G. black sheet of the same gauge number.
- The weight of coating provided is controlled to suit the particular requirements of the various types of sheet and falls within the range of 1.75 to 2.25 ozs. per square foot.
- 26 gauge Red Orb and Red Zinc anneal sheets are comparable in strength to the more ductile 24 gauge sheets carrying the well-known Blue Brands.
- 1 in. corrugated sheet is supplied in 26 gauge only.
- All qualities are packed in cases containing approximately 10 cwt. of sheets.

BARNEY'S CATALOGUE

## STANDARD 8 x 3" CORRUGATIONS SHEET



## APPROXIMATE WEIGHT PER SHEET (LBS.)

Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	20.2	21.3	17.3	13.9	9.4
6	21.4	22.5	20.6	16.7	11.2
7	26.1	27.7	24.0	19.4	13.1
8	41.8	33.9	27.4	22.2	14.9
9	47.0	38.1	30.8	24.9	16.8
10	52.2	42.3	34.2	27.7	18.6
11	57.4	46.5	37.6	30.4	20.5
12	62.6	50.7	40.9	33.1	22.4

APPROXIMATE NUMBER OF SHEETS  
PER HALF TON CASE

Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	43	53	66	84	120
6	36	45	56	70	100
7	31	38	48	60	85
8	27	34	42	52	75
9	24	30	37	47	66
10	22	27	33	42	60
11	20	25	30	38	54
12	18	23	28	35	50

## COVERING CAPACITY PER TON

One ton of corrugated sheet with 6 in. end lap and 1 1/2 corrugations side lap has the following covering capacity

Length in Ft.	18g.	20g.	22g.	24g.	26g.
5	721	887	1099	1360	2011
6	736	905	1121	1383	2055
7	745	919	1137	1407	2084
8	754	929	1150	1418	2114
9	760	937	1159	1434	2126
10	764	942	1167	1440	2145
11	768	948	1171	1451	2151
12	774	953	1181	1459	2194

## ARCHITECTS' SPECIFICATION

12

## MATERIALS

**GENERAL** All roofing materials noted in this specification shall be as manufactured by Lysaght's Newcastle Works Ltd. Galvanized iron or Zincanneal sheets shall be of specified gauge, with manufacturer's brand—e.g., Queen's Head; Ors; Red Ors; Zincanneal or Red Zincanneal—clearly indicated on each sheet. All hangers, nails, screws, etc., shall be galvanized.

**LINING** Galvanized Corrugated Sheets shall be in Standard 3 in. or 5 in. corrugations. All specified internal lining sheets shall be Standard 1 in. corrugated Australian "Ors" brand.

**SHEET METAL** All sheet metal used in the formation of flat roofs and in the manufacture of spouting, downpipes, ridging, gutter lining, flashing, skylights and ventilators shall be of Australian "Queen's Head" galvanized or Zincanneal special flat sheet.

**SOLDER** Where specified to be used, solder shall be of best grade and shall consist of 50/50 tin and lead in the case of Galvanized iron and 60/40 for use with Zincanneal.

**NOTE**—All joints to be wiped dry.

## WORKMANSHIP

**GENERAL** The application of corrugated sheets and sheet metal fittings shall be in strict accordance with the following specifications. Where details are provided, the construction shall be as indicated on drawings.

Care shall be exercised to avoid breaking galvanized coating when forming and installing sheets. The same care shall be necessary when securing sheets with screws, bolts, nails or rivets. Solder and solder shall be used at laps to provide complete waterproof joints.

**PITCHED ROOFS** All pitched roofs shall be covered with...ft. 24 gauge Red Ors corrugated galvanized iron or "Red Zincanneal" standard corrugated roofing sheets, and applied with a side lap of one and a half corrugations and a minimum end lap of 6 in. Sheets shall span at least two purlins or battens spacers and shall be secured to (a) all purlins or (b) all 3 in. x 1 in. hardwood battens with spring headed roofing nails (or galvanized screws and washers) pierced through the top of every second corrugation at end laps and every third corrugation at intermediate battens or purlins or (c) steel purlins with...in. galvanized hook bolts provided with galvanized and lead washers, three to each sheet.

Alternatively, sheets may be secured to steel purlins by means of galvanized clips and rivets, 1 in. x 18 gauge galvanized iron straps, or by drilling and tapping purlin and securing sheets with galvanized bolts and lead washers as indicated on drawing (Ref. Sheet No. 4). The gable rake shall be finished by applying (a) wood batten board and cap as specified under "Carpenter" (b) 24 gauge...in. galvanized iron cappings secured with 16 gauge clips spaced at approx. 26 in. c/s and fixed (a) to wood framing with galvanized screws and washers, (c) with...in. galvanized bolts and washers to the roofing and side sheets forming the gable rake. (Ref. Sheet No. 7.)

**BULL-NOSE VENTILATING** Curved sheets at the head of sawtooth roof shall be curved to R...in. rise and provided with a 2 in. x 1 1/2 in. Oregon batten secured to sheets with (a) spring-headed bolts, (b) galvanized screws and washers. This batten shall provide fixing for the outer edge of galvanized batten secured as shown on drawing. (Ref. Sheet No. 8.)

**R RIDGES AND HIPS** Ridging and hip capping shall be of 24 gauge Queen's Head galvanized iron or Zincanneal sheet metal formed from 6 in. wide sheets of 8 ft. or 8 ft. lengths. Ridging and hip capping shall be fixed where shown on drawings lapped (a) at least 6 in. at end joints and securely fixed in position in conjunction with roofing sheets; (b) at end joints and secured with 16 gauge clips spaced two to each length of ridge, and fixed to battens or purlins with (a) special spring-headed roofing nails (b) galvanized screws and washers. (Ref. Sheet No. 7.)

## VALLEYS

The valleys shall be laid with 24 gauge Queen's Head galvanized iron or Zincanneal sheet metal formed from 6-29 in. wide sheets in 5 ft. to 5 ft. lengths lapped min. 6 in. and riveted and soldered at joints, turned over at edges under roof covering and cut and lapped at valley gutters. All to be secured with strong galvanized lugs soldered and riveted to valley and nailed to roof timbers with stout galvanized clout nails. Flash at head of valleys with 24 gauge Zincanneal. (Ref. Sheet No. 8.)

## ROLLED EDGING

Cover the intersection of the roof and side walling with 24 gauge galvanized iron Standard Edge Roll secured at 5 ft. c/s with galvanized screws fitted with lead washers. Alternatively, edge roll may be formed by bending sheet under and returning on itself so that corrugations coincide and fixing with galvanized screws and washers as specified above. (Ref. Sheet No. 7.)

## EAVES CUTTERS

Eaves gutters shall be 4 to 7 in. 24 gauge Queen's Head galvanized iron or Zincanneal sheet metal quadrant gutters in 8 ft. to 8 ft. lengths, fixed in position with required falls to outlets, lapped and double riveted and soldered at joints, and secured (a) to rafters with 16 gauge galvanized brackets screwed with a pair of screws to each batten, after, or at intervals of approximately 3 ft., or (b) secured to fascia boards with galvanized spines and distance washers spaced 3 ft. c/s or (c) secured to corrugated roofing sheets with 16 gauge brackets fastened to sheets at intervals of 3 ft. with a pair of screws, nails, nuts and washers at each point of fixing.

Cut gutters for receiving thimble connection of downpipes and properly solder at these junctions. Provide galvanized wire gratings at all downpipe outlets. Properly construct all step ends, mitres, etc. (Ref. Sheet No. 5.)

## DOWNPIPES

Provide and fix where shown on drawings (a) 24 gauge...in. diameter round, or (b) 24 gauge...in. x...in. square galvanized iron or Zincanneal rainwater pipes in 8 ft. to 8 ft. lengths well ended and soldered at joints, and complete with all necessary bends, elbows, junctions, etc. Downpipes shall be secured (a) to weatherboards with 16 gauge galvanized or Zincanneal straps screwed to wall; (b) to brickwork joints with galvanized wrought iron wall hooks—two to each length of downpipe or with...in. galvanized iron or Zincanneal straps 4 in. wide soldered to each length of pipe and fixed to wall plugs with galvanized screws and washers and 6 stancon pieces; (c) to corrugated wall siding sheets with 16 gauge straps bolted to sheets with a pair of in. galvanized bolts and washers. Spacing of same to be two to each length of pipe. Downpipes shall be connected at head to thimble connections with crimped bends, straight elbows, or swivel-neck joints and at the foot to standard pipe drains with standard shoe pieces through cemented joints. (Ref. Sheet No. 6.)

Downpipes are to be blocked out 1 in. clear of walls and are to be painted prior to fix. Downpipes discharging on to a lower roof are to be fixed with a 24 in. long perforated spreader of the same section having no junction piece in the centre, and riveted and soldered to the foot of the downpipe, care being taken to avoid discharging water in vicinity of side laps. (Ref. Sheet No. 6.)

## RAINWATER HEADS

Provide and fix where shown rainwater heads to detail constructed of 24 gauge galvanized iron or Zincanneal, to be made to shape, and riveted and soldered together, with stout galvanized wire crimp mesh grating soldered to top. (Ref. Sheet No. 5.)

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# LYSAGHTS DATA SHEETS OF ROOFING INFORMATION

## CORRUGATED GALV. IRON ROOFS TO WOOD TRUSS ROOFS



## DETAILS SHOWING FIXING TO CORRUGATED RAFTER ROOFS



## DETAILS SHOWING FIXING TO STEEL TRUSS ROOFS



## DETAILS OF ALTERNATIVE FIXINGS TO STEEL TRUSS ROOFS



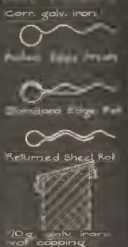
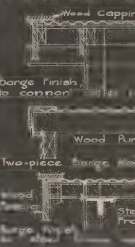
## STANDARD FIXING DETAILS AND APPLICATIONS



## CAPPINGS



## ALTERNATIVE CORNER FINISHES



# LYSAGHTS DATA SHEETS OF ROOFING INFORMATION



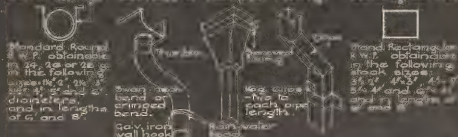
Standard of gutters obtainable in 1', 4', 6', 8' and 12' widths  
STANDARD TYPES OF GUTTERS



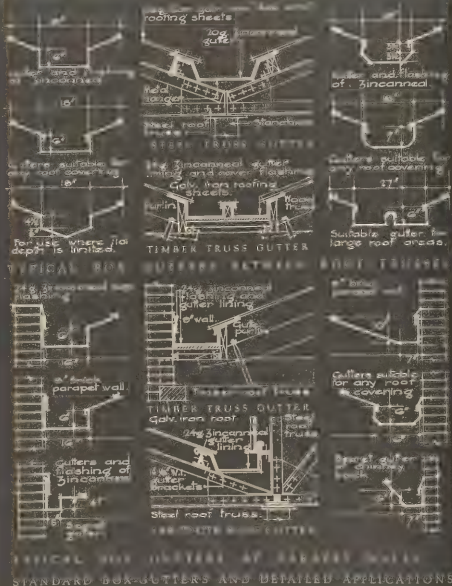
## STANDARD TYPES OF VALLEY GUTTERS



## STANDARD TYPES OF R.W.P.'S AND FIXINGS



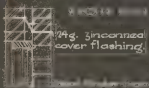
## RAVES GUTTERS VALLEYS R.W.P.'S AND FIXINGS





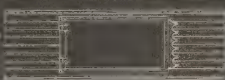
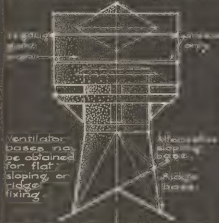
# LEARNER DATA SHEETS OF ROOFING INFORMATION

## STANDARD METHODS OF FLASHINGS IN BRICK WALLING



## STANDARD EXHAUST VENT

## STANDARD GLAZED ROOF LIGHT



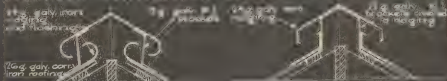
Special weather ventilator made of 24g zinc coated or zinc annealed steel bases can be used to suit any roof pitch.

TYPICAL FLASHING

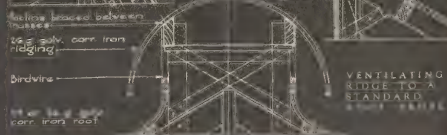
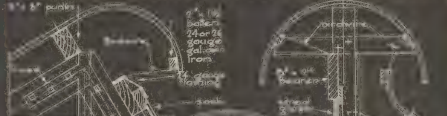
## TYPICAL FLASHING EXHAUST VENTILATOR & ROOF LIGHT

# LYSAGHTS DATA SHEETS OF ROOFING INFORMATION

## STANDARD VENTILATING RIDGES - SIX TOOTH RIDGES



## STANDARD VENTILATING RIDGES - SIX TOOTH RIDGES



## STANDARD TYPES OF VENTILATING RIDGES

# AUSTRAL BRONZE COMPANY PTY. LIMITED

Established 1914.

Head Office and Works:  
BRASS AND COPPER ROLLING MILLS, D'RIORDAN ST., ALEXANDRIA, N.S.W.  
Branch Office.

ADELAIDE - BRISBANE - PERTH

Branch Office and Bulk Store:  
101-105 KING STREET, MELBOURNE

[For Other Products, See Index]

## SHEET COPPER APPLIED TO ROOF COVERING, GUTTERS AND DOWN PIPES

### Permanent

Copper is an excellent material for general Sheet Metal purposes, particularly for roofing, gutters, downpipes, flashings, ridging, rainwater heads and cornices. Its physical and chemical characteristics make it an outstanding metal for long service under severe conditions.

A copper roof will last for generations—probably centuries. Numerous important buildings, as well as many fine residences throughout the world, have copper roofs—some of them over 300 years old.

### Retards Corrosion

Copper retards appreciably the corrosive action of acid fumes, and is a most effective material for use under extreme atmospheric conditions such as are found in manufacturing localities and cities. Near the sea coast and in country districts its durability is unquestioned.

The green coating, or patina, which appears on copper after exposure to the atmosphere, is mainly

basic Copper sulphate and chloride, which, acting as a shield against deterioration, also makes a most beautiful roofing material which does not require painting or special protection of any kind.

### Economical

Freedom from repairs or maintenance expenses, combined with durability, makes Copper one of the most suitable and best roofing materials obtainable. It has higher salvage value than other metal used for building purposes, and, being relatively indestructible, it can be salvaged from any structure destroyed, and will always sell for a substantial figure.

### Details of Application

The Company will be pleased to send a copy of its handbook, "Sheet Copper—Its Application to Roof Covering," to Architects, Master Builders, Plumbers and others interested in the application of sheet copper to building construction.



Roof of a Hospital Chapel, N.E.W., covered with the finest sheet copper rolled by Austral Bronze Company Pty. Limited.

## BRIEF DATA ON THE APPLICATION OF SHEET COPPER

### WEIGHT AND GAUGE OF SHEET COPPER

Copper sheets are made in all gauges up to 31 I.B.W.G. They are usually defined by the oz. weight per sq. ft.; that is, "14 oz. copper" means copper weighing 14 oz. per sq. ft. or 34 I.B.W.G.

### RECOMMENDED WEIGHT OF METAL

Do not use lighter than 16 oz. copper. Hard copper is generally used for down pipes, eaves gutters, and cornices. Soft copper, as it is more easily workable, is used elsewhere—especially for roofing sheets.

### EAVES GUTTERS AND DOWNPIPES (See Points 11 and 14 on following page)

These may be obtained in similar sections to those available in galvanised sheet metal. Hangers for eaves gutters can be of cast bronze or brass, and of scrap Copper or brass. Downpipes should be held in position by brass wall hooks, or heavy brass or copper straps.

### FLASHINGS (See Points 1, 2, 4, 7 on following page)

Flashings should be at least 4 inches high and project not less than 4 inches out on to the roof. Cap flashings should be turned down over base flashings not less than 4 inches. Stripped flashings, when not soldered, should lap at least 5 inches. Exposed edges of flashing are folded under 1 inch so as to provide a drip-line, and prevent lifting by the wind.

### VALLEY GUTTERS (See Point 3 on following page)

Valley Gutters should be in long sheets and project up at least 4 inches under roofing tiles. The edges of sheets should be turned back 1 inch, and be secured with copper cleats fixed to valley boarding.

### ROOFING (See Points 5, 9, 13, 15 on following page)

1. Copper sheets should be laid on building paper or roofing felt on T & G. decking.
2. Avoid sharp bends.
3. Never nail copper sheets. Use cleats.
4. Nail copper cleats with copper nails—never iron or steel.
5. Allowance for the expansion and contraction of copper sheets should be provided by: (a) forming the edges to make locked seams with adjacent sheets, and nailing each sheet to roof decking with cleats, and soldering the seams thus formed; or (b) by fixing wood rails or battens to the roof decking and securing the sheets with cleats nailed to the rails, and covering the rails with copper capping. The first method would be similar to that used at Points Nos. 4 and 15 on the following page. The second method similar to that used at Points Nos. 4 and 16. Cross seams in the latter would be made similarly to the former.

### SOLDER

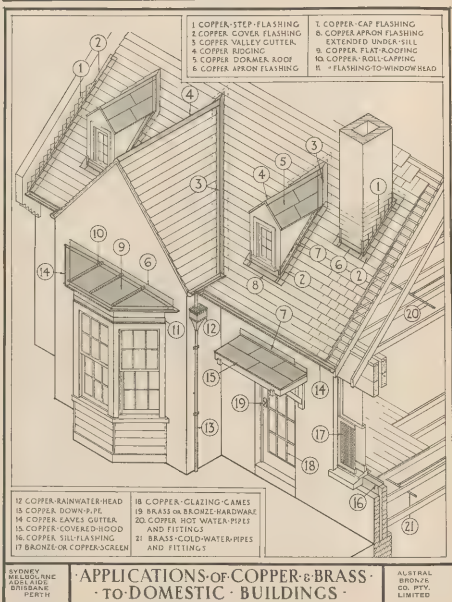
The only solder which should be used is the best 50-50 solder obtainable. It must be composed of new tin and new lead.

### COPPER IN CONTACT WITH OTHER METALS

The possibility of galvanic action between copper and iron or steel should be avoided by proper insulation, such as—

1. By covering the steel member with asbestos;
2. By placing strips of sheet lead between the two metals.
3. By heavily tinning the iron.

(Continued on following page)  
—RAMSAY'S CATALOGUE



# GEORGE WARD PTY. LTD.

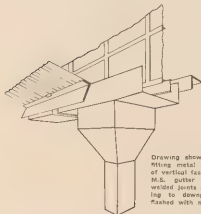
17 ORR STREET, CARLTON, N.3, VIC.

Telephones:

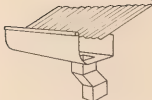
FJ6297 FJ4725

*Roofing Specialists and Contractors*

12  
3



Drawing showing typical method of fitting metal box gutter along base of vertical face to sawtooth. Set on M.S. gutter straps with bronze-welded joints and welded sump leading to downpipe. Window frames flashed with metal flashing.

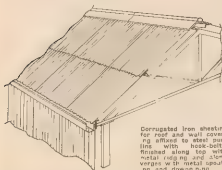


Detail showing metal spouting with 90° elbow leading to downpipe.

★ The advent of man actually heralded the establishment of the roofing industry. The progress made during the march of time is vividly portrayed by a comparison of the efforts of primitive man and our modern structures.

Typical examples of modern roofing work are depicted on this page. The corrugated steel roof covering, light, strong and durable, affords adequate protection against the elements. The corrosion-resistant metal box gutters with bronze-welded joints, obviate fractures and consequent leakages. Carefully fabricated and fitted metal spouting, rainwater heads, flashings and downpipes ensure complete and satisfactory roof drainage.

We specialize in roofing and it is our established policy to keep abreast of all improvements and innovations—in many cases initiating them ourselves. With our staff of skilled and experienced workmen utilizing proved modern methods and up-to-date machinery, we are therefore not only capable, but fully equipped, to carry out this type of work.



Corrugated iron sheeting for roof and wall covering affixed to steel purlins with hook-bolts, finished along top with metal ridge capping and downpipe.

---

## GEORGE WARD PTY. LTD.

Telephones: FJ6297 FJ4725

**Specialists in Sheet Metal  
Roofing and Accessories**

SAMSAI & CATALOGUE



**SKYLIGHTS AND  
ROOF VENTILATORS**

SECTION

**13**

SECTION

---

CATALOGUES 1 and 2

---

# THE "PLUMMER"

Reinforced Concrete Framed  
SKYLIGHT

## 13 PRISMATIC "SKY-LAY" LIGHT

Patent No. 20744/34

A Permanent Source of Abundant Daylight for  
the Modern Building

### The "Plummer" Skylight:-

Is a scientific construction formed of a reinforced concrete frame, fixed with a series of small optical prisms constituting merely 8 1/2 in. by 4 1/2 in. tubes with glass lenses set in plastic. These features provide the following advantages:-

- (a) Secure entry.
- (b) No possibility of breakage of glass from explosion.
- (c) Easy replacement of a broken lens in the event of accident, without damage to the concrete frame.

STRONG AND DURABLE IN THE VERY WALLS OF THE BUILDING  
BUILT TO CARRY FOOT TRAFFIC ON A CLEAR 4 FT. SPAN

### The "Plummer" Prismatic "Sky-lay" Light:-

Is identical with the "Plummer" Skylight described above with the addition of a secondary prismatic skylight attached to the under-surface. The skylight is formed of 3/4 in. x 9 1/2 in. x 1/2 in. prismatic lenses which give the widest diffusion of light. They are securely sealed at the joints with a mastic compound and the air tightness of the joint between top and bottom lenses is absolutely guaranteed and confirmed by tests. And forms an efficient insulator against heat, cold and sound.

Note features of construction in Specifications and Detail.

#### FIRE REGULATIONS

These skylights being fixed with WIREGLASS LENSES comply with all building regulations and are approved of and listed by the Fire Underwriters Association, LONDON AND AUSTRIA, for use in fire-resisting buildings.

#### DATA

Designed in finished concrete glass, packed for shipment, or supplied complete by lbs. Weight, approx 26 lbs per sq ft. Maximum pitch 1 inch in 6 inch. Maximum span, 6 feet between supports. Ventilators fitted when required.



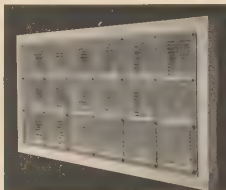
100-40-71 of "PLUMMER PRISMATIC SKY-LAY" LIGHTS  
WATER & SEWERAGE BOARD'S BUILDING, PITT ST. SYDNEY

#### ARCHITECT'S SPECIFICATION

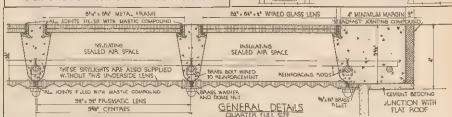
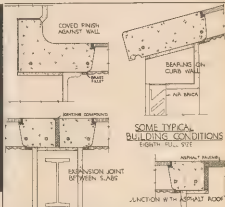
SKYLIGHTS: Prismatic skylights  
to be supplied fixed and left watertight by B. G. Plummer & Co.  
to be supplied by B. G. Plummer & Co., and fixed and left watertight  
by the Contractor.

Formed of plain thick reinforced concrete construction, fixed with small square corner metal frames, glazed with 3/4 in. x 9 1/2 in. x 1/2 in. glass lenses set in Mastic.

LIGHTS: Underneath of lens fixed with 3/4 in. x 9 1/2 in. x 1/2 in. glass prismatic lenses bedded in Mastic and fixed on support brass bolts, fixed in masonry with expansion bolts, fixed with 3/4 in. x 9 1/2 in. x 1/2 in. glass prismatic lenses set in Mastic.



UNDERSIDE VIEW OF ONE OF 28 PLUMMER SKY-LAY  
LIGHTS FOR LITHGOW SMALL ARMS FACTORY.



Established 1907.

B. G. PLUMMER & CO.

183 HAY ST., SYDNEY, N.S.W.

QUEENSLAND:  
Alexander Anderson,  
Bathurst Street,  
Winton, Brisbane.

NORTH QUEENSLAND:  
Northern Builders Supplies  
Pty. Ltd.  
Calvin, Brisbane, Mackay.

TASMANIA  
Hargreaves & Lancelotti Pty. Ltd.  
Robert and Laurence.

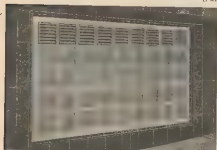
VICTORIA:  
T. B. GRIFFIN & Son Ltd.  
100-102-104-106-108-110-112-114-116-118-120-122-124-126-128-130-132-134-136-138-140-142-144-146-148-150-152-154-156-158-160-162-164-166-168-170-172-174-176-178-180-182-184-186-188-190-192-194-196-198-200-202-204-206-208-210-212-214-216-218-220-222-224-226-228-230-232-234-236-238-240-242-244-246-248-250-252-254-256-258-260-262-264-266-268-270-272-274-276-278-280-282-284-286-288-290-292-294-296-298-300-302-304-306-308-310-312-314-316-318-320-322-324-326-328-330-332-334-336-338-340-342-344-346-348-350-352-354-356-358-360-362-364-366-368-370-372-374-376-378-380-382-384-386-388-390-392-394-396-398-400-402-404-406-408-410-412-414-416-418-420-422-424-426-428-430-432-434-436-438-440-442-444-446-448-450-452-454-456-458-460-462-464-466-468-470-472-474-476-478-480-482-484-486-488-490-492-494-496-498-500-502-504-506-508-510-512-514-516-518-520-522-524-526-528-530-532-534-536-538-540-542-544-546-548-550-552-554-556-558-560-562-564-566-568-570-572-574-576-578-580-582-584-586-588-590-592-594-596-598-600-602-604-606-608-610-612-614-616-618-620-622-624-626-628-630-632-634-636-638-640-642-644-646-648-650-652-654-656-658-660-662-664-666-668-670-672-674-676-678-680-682-684-686-688-690-692-694-696-698-700-702-704-706-708-710-712-714-716-718-720-722-724-726-728-730-732-734-736-738-740-742-744-746-748-750-752-754-756-758-760-762-764-766-768-770-772-774-776-778-780-782-784-786-788-790-792-794-796-798-800-802-804-806-808-810-812-814-816-818-820-822-824-826-828-830-832-834-836-838-840-842-844-846-848-850-852-854-856-858-860-862-864-866-868-870-872-874-876-878-880-882-884-886-888-890-892-894-896-898-900-902-904-906-908-910-912-914-916-918-920-922-924-926-928-930-932-934-936-938-940-942-944-946-948-950-952-954-956-958-960-962-964-966-968-970-972-974-976-978-980-982-984-986-988-990-992-994-996-998-1000-1002-1004-1006-1008-1010-1012-1014-1016-1018-1020-1022-1024-1026-1028-1030-1032-1034-1036-1038-1040-1042-1044-1046-1048-1050-1052-1054-1056-1058-1060-1062-1064-1066-1068-1070-1072-1074-1076-1078-1080-1082-1084-1086-1088-1090-1092-1094-1096-1098-1100-1102-1104-1106-1108-1110-1112-1114-1116-1118-1120-1122-1124-1126-1128-1130-1132-1134-1136-1138-1140-1142-1144-1146-1148-1150-1152-1154-1156-1158-1160-1162-1164-1166-1168-1170-1172-1174-1176-1178-1180-1182-1184-1186-1188-1190-1192-1194-1196-1198-1200-1202-1204-1206-1208-1210-1212-1214-1216-1218-1220-1222-1224-1226-1228-1230-1232-1234-1236-1238-1240-1242-1244-1246-1248-1250-1252-1254-1256-1258-1260-1262-1264-1266-1268-1270-1272-1274-1276-1278-1280-1282-1284-1286-1288-1290-1292-1294-1296-1298-1300-1302-1304-1306-1308-1310-1312-1314-1316-1318-1320-1322-1324-1326-1328-1330-1332-1334-1336-1338-1340-1342-1344-1346-1348-1350-1352-1354-1356-1358-1360-1362-1364-1366-1368-1370-1372-1374-1376-1378-1380-1382-1384-1386-1388-1390-1392-1394-1396-1398-1400-1402-1404-1406-1408-1410-1412-1414-1416-1418-1420-1422-1424-1426-1428-1430-1432-1434-1436-1438-1440-1442-1444-1446-1448-1450-1452-1454-1456-1458-1460-1462-1464-1466-1468-1470-1472-1474-1476-1478-1480-1482-1484-1486-1488-1490-1492-1494-1496-1498-1500-1502-1504-1506-1508-1510-1512-1514-1516-1518-1520-1522-1524-1526-1528-1530-1532-1534-1536-1538-1540-1542-1544-1546-1548-1550-1552-1554-1556-1558-1560-1562-1564-1566-1568-1570-1572-1574-1576-1578-1580-1582-1584-1586-1588-1590-1592-1594-1596-1598-1600-1602-1604-1606-1608-1610-1612-1614-1616-1618-1620-1622-1624-1626-1628-1630-1632-1634-1636-1638-1640-1642-1644-1646-1648-1650-1652-1654-1656-1658-1660-1662-1664-1666-1668-1670-1672-1674-1676-1678-1680-1682-1684-1686-1688-1690-1692-1694-1696-1698-1700-1702-1704-1706-1708-1710-1712-1714-1716-1718-1720-1722-1724-1726-1728-1730-1732-1734-1736-1738-1740-1742-1744-1746-1748-1750-1752-1754-1756-1758-1760-1762-1764-1766-1768-1770-1772-1774-1776-1778-1780-1782-1784-1786-1788-1790-1792-1794-1796-1798-1800-1802-1804-1806-1808-1810-1812-1814-1816-1818-1820-1822-1824-1826-1828-1830-1832-1834-1836-1838-1840-1842-1844-1846-1848-1850-1852-1854-1856-1858-1860-1862-1864-1866-1868-1870-1872-1874-1876-1878-1880-1882-1884-1886-1888-1890-1892-1894-1896-1898-1900-1902-1904-1906-1908-1910-1912-1914-1916-1918-1920-1922-1924-1926-1928-1930-1932-1934-1936-1938-1940-1942-1944-1946-1948-1950-1952-1954-1956-1958-1960-1962-1964-1966-1968-1970-1972-1974-1976-1978-1980-1982-1984-1986-1988-1990-1992-1994-1996-1998-2000-2002-2004-2006-2008-2010-2012-2014-2016-2018-2020-2022-2024-2026-2028-2030-2032-2034-2036-2038-2040-2042-2044-2046-2048-2050-2052-2054-2056-2058-2060-2062-2064-2066-2068-2070-2072-2074-2076-2078-2080-2082-2084-2086-2088-2090-2092-2094-2096-2098-2100-2102-2104-2106-2108-2110-2112-2114-2116-2118-2120-2122-2124-2126-2128-2130-2132-2134-2136-2138-2140-2142-2144-2146-2148-2150-2152-2154-2156-2158-2160-2162-2164-2166-2168-2170-2172-2174-2176-2178-2180-2182-2184-2186-2188-2190-2192-2194-2196-2198-2200-2202-2204-2206-2208-2210-2212-2214-2216-2218-2220-2222-2224-2226-2228-2230-2232-2234-2236-2238-2240-2242-2244-2246-2248-2250-2252-2254-2256-2258-2260-2262-2264-2266-2268-2270-2272-2274-2276-2278-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4280-4282-4284-4286-4288-4290-4292-429



# PLUMMER CONCRETE FRAMED PAVEMENT and STALLBOARD LIGHTS

(Pat. No. 20/14/34)

13/1



A close-up photograph of one of the Plummer Concrete-Framed Stallboard Lights, North Annandale Hotel.

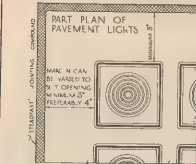
PLUMMER CONCRETE-FRAMED PAVEMENT LIGHTS have a metal frame (note the patent double gutter metal frames, ensuring secure and water-tight fixing in concrete) and MASTIC FILLING round each lens, which also acts as a seal against leakage from expansion joints. The lenses are without damage to the concrete.

BOTH PAVEMENT and STALLBOARD LIGHTS are glazed with replaceable PRISMATIC LENSES, which give greatest possible diffusion of light. The glass is a selected quality specially annealed for the work, making it very tough and durable.



"Plummer" Pavement Lights, Stafford House, 263 Castlereagh Street, Sydney.

## SOME TYPICAL DETAILS OF PAVEMENT LIGHTS



## ARCHITECTS' SPECIFICATIONS.

### PAVEMENT LIGHTS.

- (a) SUPPLIED, FIXED AND LEFT WATER-TIGHT BY B.G. PLUMMER & CO., LTD.
- (b) SUPPLIED IN FINISHED CONCRETE SLABS BY B.G. PLUMMER & CO., LTD. AND FILLING AND WATER-TIGHT BY THE CONTRACTOR.

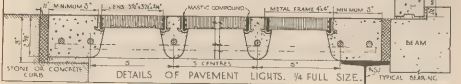
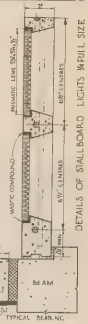
PAVEMENT LIGHTS SHALL BE FORMED OF 2 1/2" THICK REINFORCED CONCRETE CONSTRUCTION, FITTED WITH 2 1/2" x 2 1/2" INSERT METAL FRAMES SPACED ON 5" CENTRES AND GLAZED WITH SPECIALLY ANNEALED REPLACEABLE PRISMATIC LENSES SET IN MASTIC.

STALLBOARD LIGHTS. PLUMMER CONCRETE-FRAMED STALLBOARD LIGHTS FORMED OF 2 1/2" THICK REINFORCED CONCRETE FRAMES, GLAZED WITH 2 1/2" x 2 1/2" REPLACEABLE PRISMATIC LENSES SPACED ON 5" CENTRES AND SET IN MASTIC.

APPROXIMATE WEIGHTS—PACKED FOR SHIPMENT.  
PAVEMENT LIGHTS—30 POUNDS PER SQ. FOOT.  
STALLBOARD LIGHTS—20 POUNDS PER SQ. FOOT.

### TYPICAL INSTALLATIONS.

CEILING BUILDING, O'DONNELL & BART ST. SYDNEY.  
COMMERCIAL BUILDING, AUSTRALIA, ROAD OFFICE, SYDNEY.  
A.P.A. BUILDING, MARSH PLACE, SYDNEY.  
LONDON COURT, 200, WILKINSON STREET, AUSTRALIA.  
WATCHDOG, 200, WILKINSON STREET, AUSTRALIA.  
CEILING, 200, WILKINSON STREET, AUSTRALIA.  
STAFFORD HOUSE, 263, CASTLEREAGH STREET, SYDNEY.  
CENTRAL BUILDING, 200, WILKINSON STREET, AUSTRALIA.  
200, WILKINSON STREET, AUSTRALIA.



## B. G. PLUMMER & CO.

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111, 113,  
Hay Street, Perth.

# LEOPOLD BARNETT PTY. LTD.

113 YORK STREET, SYDNEY, N.S.W.

Telephone: M 6317 (4 lines)

## BARNETT TRANSPARENT DAYLIGHT ROOFING

(Reinforced Concrete)

"Lasts as Long as the Building"

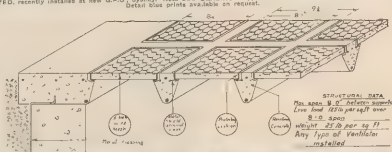
A SKY-LIGHT ROOF CONSTRUCTION WITHOUT EQUAL.

13

2



Photograph showing portion of "PRINCETON" SUB-GLAZING on 57 Panels "BARNETT DAYLIGHT ROOFING." DOUBLE GLAZED, recently installed at new G.P.O., Sydney. Note SUB-GLAZING dropped to level of sills. Total area, over 5,500 ft. Detail blue prints available on request.

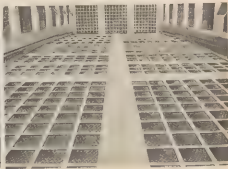


### STRUCTURAL DATA

Max span 9' 0" between supports  
Live load 125 lb per sq ft over  
8 x 2 span  
Weight 25 lb per sq ft  
Any type of Ventilator  
installed



"BARNETT DAYLIGHT ROOFING" with "PRINCETON" SUB-GLAZING, at Eye Hospital, Sydney. Note SUB GLAZING dropped to the level of the sills; also PERFORATED METAL-EDGE MOULD, providing ample ventilation.



One of four areas "BARNETT DAYLIGHT ROOFING" at "Bryant House," City. Total area, 2,500 ft.

# LEOPOLD BARNETT PTY. LTD. BARNETT TRANSPARENT DAYLIGHT ROOFING HAS BEEN INSTALLED IN SUCH IMPORTANT CITY BUILDINGS AS

CITY MUTUAL LIFE ASSURANCE SOCIETY LTD., HUNTER AND BLIGH STREETS

DAVID JONES LTD., NEW PREMISES, CASTLE-REAGH AND MARKET STREETS

SMALL ARMS FACTORY, LITHGOW (Over 1,800 ft. super).

PRUDENTIAL INSURANCE CO. LTD., MARTIN PLACE

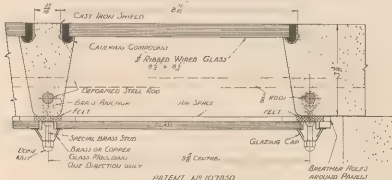
COMMONWEALTH BANK OF AUSTRALIA NORTH SYDNEY COUNCIL CHAMBERS, ETC

BRYANT HOUSE, PITT ST., CITY (Over 2,500 ft. super)

NEW G.P.O., SYDNEY. (Over 3,500 ft. super), Double Glazed

13  
2

Abundance of Daylight, Lasting Qualities in Construction, and Practically No Maintenance Cost



ILLUSTRATING OUR "PRINCETON" PATTERN SUB-GLAZING, IN THIS CASE ATTACHED AND IN JUXTAPosition TO CONCRETE FRAME

**BARNETT TRANSPARENT DAYLIGHT ROOFING (SKYLIGHT)** is constructed with carrying members of Reinforced Concrete. The glass is ribbed, wired, 8 1/2 in. square, 1/2 in. thick, set in galvanneal metal shields with special elastic caulking compound, protecting the glass from expansion pressure, and at the same time permitting easy and instant replacement without skilled help at any time it should be necessary.

The construction is capable of carrying a uniformly distributed live load of 120 lbs. per sq. ft., and is both fireproof and burglar proof.

Spans are made without intermediate beams up to 8 ft. clear.

We recommend installation at building with our own mechanics, but factory finished slabs can be furnished if necessary.

**BARNETT TRANSPARENT DAYLIGHT ROOFING (SKYLIGHT)** has a light area covering more than 75 per cent. of its surface. It sets as flat as the roof itself, so that light does not have to penetrate glass at an angle.

## BARNETT REINFORCED CONCRETE PAVEMENT LIGHTS

PROVIDE SUNLIGHT and daylight in vault and basement in a more permanent way than any other light medium we know of.

**INSTANT REPLACEMENT OF GLASS.** Should it become necessary to replace a glass unit, replacement can be made in a few moments' time; no special skill required. This means pavement lights can be kept in

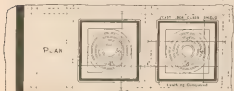
**BARNETT TRANSPARENT DAYLIGHT ROOFING (SKYLIGHT)** has large spans without supporting beams, permits lights and slab being built in one section, cannot buckle or sag, and may be walked upon as an ordinary floor, supporting foot traffic, tables and chairs.

**DOUBLE GLAZING.** Maximum diffusion of light, greatly improved insulation, coupled with beauty of interior ceiling effect, are available under our systems of **DOUBLE GLAZING**, an excellent method of which "Princeton"—is illustrated above. These **DOUBLE GLAZING** systems possess outstanding advantages over the ordinary lay light, not the least of which is that, whilst being integral with the Reinforced Concrete frame above, the sub-frame can be dropped to suit the interior architectural requirements.

Over 3,500 ft. of "PRINCETON" PATTERN DOUBLE GLAZING has been installed for the Commonwealth Works Department at the new G.P.O., Sydney.

perpetual good condition at practically no maintenance cost.

**WATERTIGHT** compounds which we use for waterproofing are prepared specially for this purpose, and are of the highest grade and quality for additional insurance against leakage.



LONGITUDINAL SECTION THRU JOINT

Abundance of Daylight, lasting qualities in construction, and practically no maintenance cost.

BARNETT'S CATALOGUE



**TILE AND SLATE  
ROOFING**

SECTION

**14**

SECTION

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CATALOGUES 1 and 2

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## ARCHITECTS' SPECIFICATION "Thermotile" Roofing

**PREPARATION.**—The concrete roof surfaces are to be of smoothly rendered cement or T. and G. boarding, graded true to falls of 2 in. in 10 ft. to all outlets. The intersections with parapet walls and superstructures are to be formed with a cement or wood angle fillet 3 in. on base and from 4 in. to 4½ in. perpendicular height. The cement surface rendering of roof around outlets to be slightly recessed to the thickness of the metal used for lining the outlets or sumps.

A "THERMOTILE" ROOF is then to be supplied and laid over the whole area comprising the three standard layers of "ROK" roofing surfaced with 12 in. x 12 in. British Asbestos or Australian cement "THERMOTILES." All bituminous layers to be cemented together with hot bitumen and the tiles and plinths also set in hot bitumen all in accordance with the practice recommended by the agents and contractors, Messrs William Crosby & Co. Pty. Ltd.

**METAL LINING TO CESSPOOLS, FLASHINGS, etc.,** should be of 1 lb. hot rolled copper, or 4 lb. lead. The bottom edge of cover flashing must lap on to plinth ½ in. below top edge, and all linings to cesspools and rainwater boxes are to have a flange not less than 6 in. wide on to flat rendering of roof surface; such boxes to be provided to the roofing contractor when the first two layers of roofing are being laid, between which layers they are to be sealed with hot bitumen.

**RE GUTTERS.**—A fall of 2 in. in 10 ft. quickly clears a roof of surface water. Gutters should be avoided whenever possible; they are always a source of weakness in a roof subjected to high extremes of temperatures. Even when outlet facilities are restricted, it is better to form additional cesspools and conduct water away in pipes rather than form a gutter on the roof and lose the stabilising influence of direct abutment at walls.

### Important roofs completed with—

#### British "Thermotiles"

Country Residence, Olinda—  
(see photo)

Prince Henry Hospital—  
Mum Sun Deck, Pathological  
Block, Melbourne

Royal Branch E. S. & A. Bank  
Colins Street, Melbourne

Mercantile Mutual Insurance  
Company's Building—Perth,  
West Australia



A view of a Genuine "Thermotile" Roof on a country residence in a beautiful setting at "Olinda," Victoria, Australia.

#### Australian "Thermotiles"

Council Scientific & Industrial  
Research, Melbourne

Commercial Bank of Aust. Ltd.  
Colins Street

London & Lancashire Assurance  
Buildings—Colins St., Melb

Heidelberg Military Hospital  
(3 Roofs)

Collins House, Melbourne  
(3 Roofs)

Modern Printing Co., Carlton  
Union Can Co., Sth. Melb.

OTHER SPECIALITIES Manufactured by D. Anderson & Son, Patentees of "Thermotile," and obtainable from WILLIAM CROSBY & CO. PTY. LTD.

Fine Bitumen Sheetings } To be used for  
"Siderasthen" Anti-corrosive Paint } For All Metal Surfaces  
"Bakolor" Bituminous Paint—For preserving "ROK" roofing  
"Bondex" Plastic Compound—For mending fractures in cement, tiles,  
Waterproofing and } For various purposes  
Insulating Felt

Full particulars and prices upon application

—CROSBY & CO. CATALOGUE

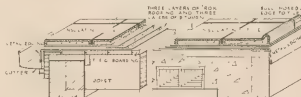
## DETAILS & APPLICATIONS

14

I



DETAIL AT PARAPET



DETAIL AT EAVES

DETAIL AT VERGE

# Wunderlich Limited

Manufacturers of

## TERRA COTTA ROOFING TILES

Administration: BAPTIST STREET, REDFERN, SYDNEY, N.S.W.

Showrooms and Offices:

SYDNEY Baptist Street, Redfern  
 5TH MELBOURNE: 219 Hanna Street.  
 ADELAIDE: Grote and Morphett Streets.  
 PERTH ASSOCIATES: M. L. Brisbane &  
 Wunderlich Ltd., Lord and Short Sts



Showrooms and Offices:

BRISBANE: 108-110 Brunswick Street, Valley  
 NEWCASTLE: King Street (near Auckland  
 Street).  
 HOBART: T. & G. Building,  
 Collins and Murray Streets  
 LAUNCESTON: 137 Camille Street.

### Products

Wunderlich Terra Cotta Tiles are manufactured in various patterns. These include the well-known Marseilles (French) Pattern; the Shingle; Standard Size and Standard Sized Weathered. Mission Large and Mission Small (Tapered Sides), Straight Barrel Mission (Melbourne type), and Cordova — sometimes called Granada—(Parallel sides).

### Colours

Colours comprise shades of Red and Chocolate, Buff, Green, Blue, Golden Brown in mottled and fire flashed, semi-glazed and full glazed effects. These provide scope for roofing treatments of either rich individual colours or else intermingled shades producing an harmonious blending of bright colouring.

### Methods of Fixing

On account of the slight variations in sizes of Tiles manufactured by the various Wunderlich Plants, the data supplied on this page can only be taken as being approximately correct. Complete information will be supplied by our nearest sales office, on request.

### Correct Length of Rafters

A saving in labour is effected, and a more secure roof results, if the rafters are cut to a length that will permit the use of whole (or uncut) Tiles for the last row, finishing at the ridge. A rafter card, showing the correct lengths of rafters for any given number of rows of Marseilles Tiles, will be provided on request.

### Estimates for Roofs Fixed

Quotations for Wunderlich Tiles fixed complete in any part of the Commonwealth, will be given on request. Select requirements from sample roofs on display at each Wunderlich Showroom.

### Accessories

Ridging, Finials and Cresting in colours and glazes to match the tiles, are available in a variety of sizes and patterns.

### Qualities and Advantages

Wunderlich Terra Cotta Roofing Tiles are renowned for their extreme hardness and truthness to shape and size. They are to a marked degree resistant to the onslaughts of time and weather.

### Experience and Facilities

There is a Wunderlich Plant for the manufacture of Terra Cotta Roofing Tiles in every State.

NAME OF TILE	DIMENSIONS	COVER	WASTAGE	BATTERS VERT. HORIZ.	RATINGS VERT. HORIZ.	VER. J. SPACING	HORIZ. J. SPACING	WEIGHT PER TILE	WEIGHT PER SQ.	NUMBER PER SQ.
SHINGLE (STANDARD)		2 1/2" x 4"			300° 1' x 1' PER SQ.		4"	7 1/2 lbs.	1760 lbs.	560
SHINGLE (WEATHERED)		2 1/2" x 4"			300° 1' x 1' PER SQ.		4"	2 1/2 lbs.	1400 lbs.	560
FRENCH PATTERN		3 1/2" x 5 1/2"	13 1/2"		90° 1 1/2" x 1' PER SQ.		13 1/2"	7 1/2 lbs.	1007 lbs.	130
SMALL MISSION		4" x 13 1/2"	160°	2 1/4" x 1' PER SQ.	SARK	7 1/2"	13 1/4"	5 1/2 lbs.	1512 lbs.	288
LARGE MISSION		4" x 13 1/4"	132°	5 1/4" x 1' PER SQ.	SARK	10"	13 1/4"	5 1/2 lbs.	1188 lbs.	216
CORDOVA (GRANADA)		4" x 3 1/4"	110°	3 1/4" x 1' PER SQ.	SARK	11"	SARK	6 1/2 lbs.	1500 lbs.	200
STRAIGHT BARREL MISSION (MELBOURNE)		4" x 14"	75°	5 1/4" x 1' PER SQ.	2 1/4" x 1' PER SQ.	10"	14"	6 1/4 lbs.	1375 lbs.	220



**STRUCTURAL  
STEEL, etc.**

SECTION

**15**

SECTION

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CATALOGUES 1 to 8

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## A. CHALLINGSWORTH PTY. LTD.

Structural Engineers

476 SWAN STREET, RICHMOND, E.1, VICTORIA

We design, fabricate, and erect all classes of structural steel, welded and riveted. Girders (all types), Cranes, Roof Trusses, Gas Holders, Silos, Steel Buildings, Chimney Stacks, Tanks, etc.

## DIAMOND GRID FLOORS

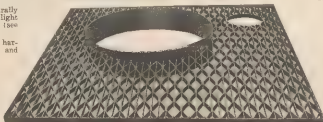
## CONSTRUCTIONAL FEATURES

1. Diamond Grid Flooring is comfortable to walk on, and loaded trucks, wheelbarrows, barrels, etc., may be wheeled or rolled over its surface with ease and safety.
2. It is structurally strong and light in weight (see below).
3. It does not harbour dust and dirt.

8. Irregularly shaped panels may be supplied to suit special requirements.

9. No Drilling is required to supporting structure for securing grids.

10. Trimmed openings may be provided to accommodate pipes, ventilators, control rods, etc. as required.



Typical Panel with Trimmed Openings

4. It admits light and air to the area below to the extent of 84 per cent. of its total surface.
5. It provides good visibility and facilitates communication between operators on different levels.
6. It is easily laid, easily lifted and easily adapted to subsequent alterations in lay-out.
7. It may be supplied in any desired colour, complete with all fastenings for securing in place.



STAIR TREAD



LADDER RUNG



TYPE	SECTION	WEIGHT per Sq Ft Lbs	Safe Distributed Load in Lbs per Sq Ft. At Varying Spans							
			2	2 1/2	3	4	5	6	8	10
B	STRAIGHT BARS, 3" x 1/2" BENT BARS, 3" x 3/4"	6	500	350	250	175	125	95	75	60
C	STRAIGHT BARS, 1" x 1/2" BENT BARS, 1" x 3/4"	8	1000	675	450	300	210	170	140	110
D	STRAIGHT BARS, 1 1/2" x 1/2" BENT BARS, 1 1/2" x 3/4"	9	1250	800	575	385	270	215	180	145



ARMCO (AUSTRALIA) PTY. LIMITED

SYDNEY

MELBOURNE

Steelox

BRISBANE

ADELAIDE

15  
2

## THE IMPROVED BUILDING MATERIAL

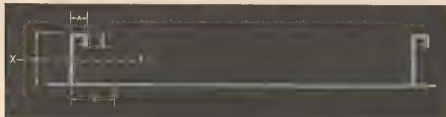
Steelox, a comparatively new building material of unique design, in which standard steel sheets are formed into structural panelled side walls and roofs to make up a complete building. These sections have been thoroughly analysed and tested by the U.S. Bureau of Standards for use as building side walls, load-bearing partitions, roofs and floors and have been found to have unusual load carrying capacity.

Ten years' experience in the housing and industrial field have proved Steelox construction practical and possessing many advantages not found in other types of construction ordinarily employed in its size range.

Since each Steelox panel is held securely by hook bolts at top and bottom without the necessity of nailing or clamping, no special tools or experience is necessary, and a complete building can be erected in less time than a conventional type building can be covered with standard sheeting.

Imperviousness to water is an inherent Steelox feature because the panels are not pierced by the securing fasteners at any place that will allow water to find its way into the building itself. Hook bolts and clips, used in conjunction with the unique Steelox joint, hold the building together.

## DESIGN DATA



## STEELOX STRUCTURAL ELEMENT—SECTIONAL CHARACTERISTICS

Width Inches	Gauge U.S.	Weight Pounds Per Sq. Ft. of Covering Area	Inches				Area Effective Section Sq. In.	Moment of Inertia I	Section Modulus S	Radius of Gyration r
			A	B	C	D				
16"	22	2.23	0.99	1.26	.72	3	.38	.49	.31	1.13
16"	20	2.61	1.06	1.50	.74	3	.47	.62	.41	1.16
16"	18	3.41	1.03	2.00	.73	3	.68	.93	.58	1.16

## SAFE TRANSVERSE LIVE LOADS\*

(Beam Action—Bending) Uniform Live Load in Pounds per Sq. Foot on Roof or Walls.

Depth Inches	Width Inches	Gauge U.S.	Co-efficient of Strength	SPAN—FEET												
				6	7	8	9	10	11	12	13	14	15	16	17	18
3	16	22	3720	75.3	64.7	41.3	32.2	25.7	20.8	17.1	14.3	12.0	10.1			
3	16	20	4944	100.4	73.1	55.4	43.1	34.5	28.0	23.2	19.3	16.3	13.9	11.9	10.2	
3	16	18	5948	141.3	102.8	77.9	60.9	48.7	39.6	32.7	27.4	23.1	19.7	16.9	14.6	12.7

\* To find the allowable load in pounds per square foot for other spans, divide coefficient of strength by square of span in feet, then deduct weight per square foot of Steelox panel. (Based on 16,000 pound per square inch Fibre Stress.)

## SAFE WALL LOADS\*

(Column Action—Compression) on Concentrically loaded Steelox Panels, in Pounds per Linear Foot.

Depth Inches	Width Inches	Gauge U.S.	Co-efficient of Strength	SPAN—FEET												
				8	9	10	11	12	13	14	15	16	17	18		
3	16	22	1678	1332	1136	978		847	750	648	576	613	489	413		
3	16	20	2315	1981	1713	1487		1296	1138	1003	894	800	719	651		
3	16	18	2740	2380	2080	1816		1572	1381	1218	1076	964	864	784	714	644

\* Allowable stresses per square inch were calculated in accordance with A.S.C. specifications

BUNN'S CATALOGUE



# ARMCO (AUSTRALIA) PTY. LIMITED

SYDNEY, MELBOURNE, BRISBANE, ADELAIDE



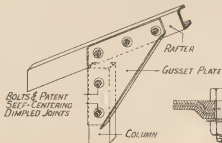
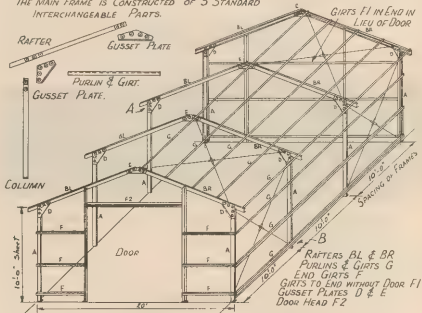
## ARMCO PRES-STEEL PREFABRICATED BUILDINGS

The Armco pres-steel Building has been designed for economy in production and economy in erection. Everything possible has been pre-cut and pre-formed before delivery and structural members have been designed with simplicity to give quick erection. Buildings are ideally suited for general utility buildings on the farm or station, for garages, machinery sheds, workshops or

storehouses. Can be supplied in widths of 20 ft. and in lengths any multiple of 10 ft. Covered with corrugated iron which, when painted, has a pleasing appearance and is fire and white ant proof. These buildings can be supplied with standard 4 ft. by 3 ft. windows in each bay and standard door openings in sides or rear, there being no timber of any kind used in the construction of Armco Pres-steel Buildings.

### CONSTRUCTION DETAIL

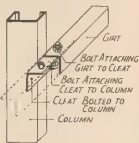
THE MAIN FRAME IS CONSTRUCTED OF 5 STANDARD INTERCHANGEABLE PARTS.



DETAIL AT "A"



PATENT DIMPLE



DETAIL AT B



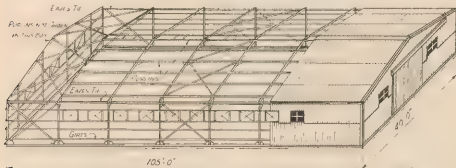
ARMCO (AUSTRALIA) PTY. LIMITED  
SYDNEY, MELBOURNE, BRISBANE, ADELAIDE



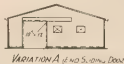
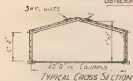
15

2

STANDARD TWO HINGED FRAME BUILDING—40-FOOT SPAN



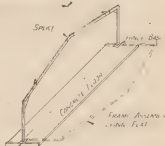
GENERAL VIEW OF ASSEMBLED BUILDING



VARIATIONS B & C (END ACCESS DOOR IN ANY POSITION SHOWN)



VARIATIONS D & E (SLIDING DOOR & ACCESS DOOR IN SIDE)



METHOD OF BRACING FRAMES



RAFTERS & SIDE COLUMNS



END COLUMNS



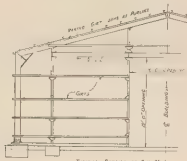
PURLINS & GIRTS



STRUT PURLINS & GIRTS



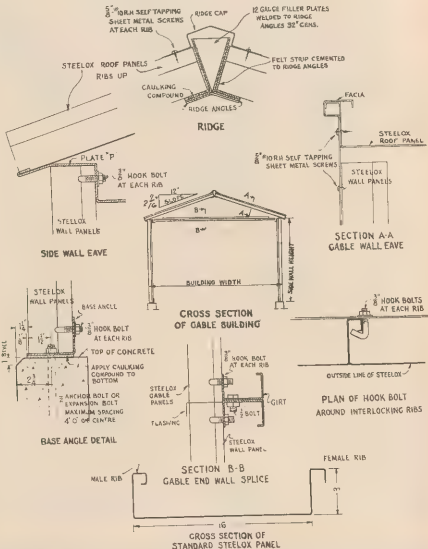
BRACING



TYPICAL DETAIL OF END WALL



DETAILS OF STEELOX CONSTRUCTION



# EDWARD CAMPBELL & SON PTY. LTD.

## Steel Constructional Engineers

### Registered Office:

114-120 VICTORIA STREET, CARLTON, N.3

Telephone FJ 1126 (3 lines)

### Works:

42 FRANKLIN ST., MELBOURNE. C.1

Telephone FJ 2616

15

3

### Products

Steel frame buildings, bridges, girders, stanchions, roofs, tanks and stands, hoppers, conveyors, cranes and gantries, runways, steel fire-escape stairways, verandahs, electric roof-signs, in fact, every kind of fabricated structural steelwork, either riveted bolted or welded.

### Plant

Our plant, comprising machines capable of turning out high-class work expeditiously, has a very central location, which adds greatly to the convenience of clients, and facilitates rapid delivery to any part of the metropolis.

### Stock

Our stocks include a comprehensive range of Australian Standard Rolled Steel Joists, Channels, Angles, Tees, Flats, Plates, Chequer Plates and Bars

### Designs and Estimates

At our Head Office in Victoria Street we maintain a staff experienced in the design of engineering structures to render service to all who are interested in our products. We will be pleased to prepare preliminary estimates, or to tender for any class of structural steelwork.

### Erection and Field Work

A competent staff of field operatives, equipped with complete gear for erecting all classes of structural steelwork, is always available.

### Saw Tooth Roof Construction

For several years we have carried out this class of work so extensively as to develop certain standards, which are set out on the next page. Buildings in which our standards are incorporated can, of course, be erected more expeditiously, and for less cost, but where peculiarities of site prevent this, the standard designs can be modified for a slight extra cost.



Two-hinged Arch Roof Construction (Span 80 ft.). Eskhua Tile Works, Ballarat, Victoria.

ED CAMPBELL  
& SON PTY LTD.  
Structural Steel  
Engineers  
MELBOURNE  
Phone Fd 1126

# STRUCTURAL STEEL DATA

INITIAL INFORMATION FOR  
ARCHITECTURAL DRAWINGS

SHEET No.

1

15

3

## SAW TOOTH ROOF CONSTRUCTION



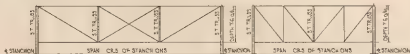
TYPE MA

MARK	MA 50	MA 51	MA 52	MA 53	MA 54	MA 55	MA 56
SPAN	50'-0"	51'-0"	52'-0"	53'-0"	54'-0"	55'-0"	56'-0"



TYPE MD

MARK	MD 50	MD 51	MD 52	MD 53	MD 54	MD 55	MD 56
SPAN	50'-0"	51'-0"	52'-0"	53'-0"	54'-0"	55'-0"	56'-0"



TYPE MC

MARK	MC 50	MC 51
SPAN	50'-0"	51'-0"

TYPE MD

MARK	MD 50	MD 51	MD 52	MD 53	MD 54	MD 55	MD 56
SPAN	50'-0"	51'-0"	52'-0"	53'-0"	54'-0"	55'-0"	56'-0"



TYPE SA

MARK	SA 50	SA 51	SA 52	SA 53	SA 54	SA 55	SA 56
SPAN	50'-0"	51'-0"	52'-0"	53'-0"	54'-0"	55'-0"	56'-0"



TYPE SB

MARK	SB 50	SB 51	SB 52	SB 53	SB 54	SB 55	SB 56
SPAN	50'-0"	51'-0"	52'-0"	53'-0"	54'-0"	55'-0"	56'-0"

### NOTES

GENERAL  
This type of construction is particularly suitable for factories where no lighting is required at a reasonable cost.

### ECONOMICAL SPACING

For economy in steel the spacing of the trusses should be 16 ft. 6 in. or 18 ft. 6 in. for Type MA 50 and Saw Tooth type.

For economy in steel the spacing of the trusses should be 16 ft. 6 in. or 18 ft. 6 in. for Type MA 50 and Saw Tooth type.

### STANDARDS

These standards conform to all building regulations in Victoria, and should generally be accepted elsewhere.





# WELDING FOR ALL CONSTRUCTIONAL PURPOSES

The simplicity of welding, which removes the necessity of many members essential to riveting design; the silence which enables steel frame structures to be fabricated with a minimum of disturbance to occupants of adjoining premises; and the flexibility of design permitted, make welding supremely suitable in all fabrication of steel-framed structures.

EMF Electric Co. Pty. Ltd. were the first manufacturers in Australia of arc welding Electrodes, Arc and Resistance Welding Plant and Resistance Heating Equipment. All EMF products are produced under laboratory control and are covered by a comprehensive guarantee.

## E. M. F. ELECTRIC CO. PTY. LTD.

### QUEENSLAND:

Brisbane—Evans, Deakin & Co. Ltd.,  
Charlotte Street B27H  
Bowen—Samuel Allen & Sons Ltd.  
Bundaberg—Wyper Bros. Ltd.,  
Bomahing Street  
Cairns—Samuel Allen & Sons Ltd.,  
Lake Street  
Innisfail—Samuel Allen & Sons Ltd.,  
E. M. St.  
Mackay—Mackay District Cane  
Growers' Executive, Wood Street  
Rockhampton—W. E. Tuser & Sons,  
7 East Street  
Townsville—Evans, Deakin & Co. Ltd.,  
Denham Street

### NEW SOUTH WALES:

Sydney—EMF Electric Company Pty.  
Ltd., Sales Division, Duddy Street,  
Alexandria MU.2211.  
Newcastle EMF Electric Company  
Pty. Ltd. Represented by CIG  
(N.S.W.) Pty. Ltd. Tel. MK.2261.  
Port Kembla EMF Electric Company  
Pty. Ltd. Represented by CIG  
(N.S.W.) Pty. Ltd. Tel. Port  
Kembla 142.

### VICTORIA:

Melbourne—EMF Electric Company  
Pty. Ltd. 801 Bathdown Street, North  
Carlton, N.4. PW.4112.

### TASMANIA:

Launceston—EMF Electric Company  
Pty. Ltd. Represented by CIG  
(Tas.) Pty. Ltd., 135 Charles Street  
L.A. 221.  
Hobart—EMF Electric Company  
Ltd. Represented by CIG (Tas.)  
Pty. Ltd., 125 Montagu Street, New  
Tas. W. 1121.

### SOUTH AUSTRALIA:

Adelaide—EMF Electric Company  
Pty. Ltd. 98 Jervois Street, Torrens-  
ville L.4114

### WESTERN AUSTRALIA:

Perth—Alston (W.A.) Ltd., 264 Hay  
Street, B.316L.  
Kalgoorlie—Hodgson & Cranston



15  
4

# BEAUFORT STEEL HOME

## *Prefabrication by*

## E.M.F. WELDING



(a) A view of a trial assembly of the Beaufort Steel Home. Very wide use was made of electric welding in this structure.

Projects such as the prefabrication and mass production of steel housing, or housing containing a proportion of steel components, are made far more economically with the use of electric resistance welding. Welding offers the opportunity of a pleasing finished appearance; permits greater freedom in design; and achieves a higher margin of safety.

In addition to the prefabrication of architectural components, welding offers great facility and efficiency in the assembly of units on the site.



(b) An interior view of the Beaufort Steel Home at a later stage of assembly.

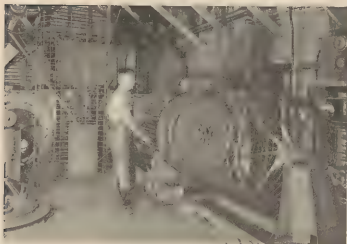
An interesting example of electric welding of steel components was in the design and construction of the Beaufort Steel Home. Use of welding enabled great freedom and simplicity of design to be achieved in the use of steel, and resulted in a considerable economy.



# CONCRETE REINFORCEMENT WELDING PROCESSES

*by E.M.F.*

15  
4



In the illustration above an E.M.F. 15 kVA cylindrical mesh welder is shown in use at the Wellington Concrete Pipe Co.'s works at Wellington. In the prefabrication of steel reinforcement for concrete, welding plays an especially large part. It ensures rigidity of design and makes possible the simple and economical fabrication of reinforcements.

Architects or engineers who are faced with problems involving the fabrication of steel for use as concrete reinforcements will gladly be given technical advice and assistance in regard to electric arc welding.



15

4

# WELDING MAKES POSSIBLE ANY FORM OF CONSTRUCTION



In contrast to the conventional exterior of the St. Kilda Town Hall, this fine modern supper room in the same building owes the simplicity of its design to the use of welded steel framework.

Renovation of the St. Kilda Town Hall involved considerable use of electric welding. Extensions to the conventional design were carried out in the same spirit as the original.



Architects and engineers are turning more and more to designs involving the use of Arc and Resistance Welding in the fabrication of structural steel work. Welding is adaptable to the requirements of practically any engineering design. Various types of connections are readily made with a high degree of strength. Welding carried out by experienced operators gives an extremely high safety factor, and is universally accepted. E.M.F. structural quality electrodes conform to all requirements of Lloyd's and of the Standards Association of Australia, and their application is governed by the S.A.A. Welding Code.

Architects have not been slow in taking advantage of the aesthetic possibilities inherent in the use of welding and many of the finest steel-reinforced structures of recent years have been welded.

E.M.F. Electric Co. Pty. Ltd. manufactures the following welding equipment:—

Arc Welding Electrodes  
Arc Welding Machines and Accessories  
Spot Welders  
Projection Welders  
Flash Butt Welders

All E.M.F. equipment is produced under laboratory control and carries a comprehensive guarantee.

**E.M.F. ELECTRIC CO. PTY. LTD.**

351 RATHDOWN STREET, NORTH CARLTON,  
N.S. VICTORIA

(For Interstate Distributors, see page one,  
of Section 15/4.)

# JOHNS & WAYGOOD LTD.

*Structural and Mechanical Engineers  
and Galvanizers*

CITY ROAD, SOUTH MELBOURNE

Phone: MX 1241 (8 lines)

15

5

## STRUCTURAL PRODUCTS

Steel Buildings.  
Steel Roof Framing.  
Bridges.  
Wireless Masts.  
Transmission Towers.

Tanks.  
Conveyor Steelwork.  
Chimneys.  
Steel Stairs and Handrails.  
Johnsway Grid Flooring.

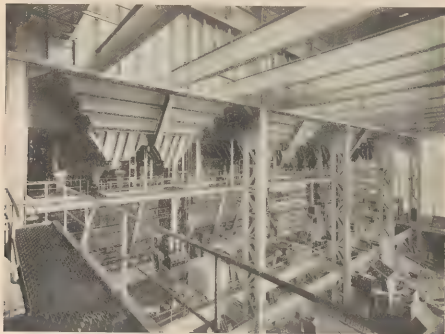
Monorail Runways, including  
Turn-out Switches and Trolleys.  
Galvanizing Pots.  
Johnsway Steel Huts.

## MECHANICAL PRODUCTS

Electric and Hand-operated  
Travelling Cranes.  
Brake Presses.

Hydraulic Plastic Presses and  
High-Speed Oil Pumps.  
Wool Press and Pumps.

Electric and Hydraulic Lifts  
See Lift Section No. 45/3.



Interior view of Steelwork in State Electricity Commission of Victoria's Newport A.C. Boiler House, designed, fabricated and erected by us for John Thompson (Aust.) Pty Ltd.

RAMSAY'S CATALOGUE

15

5

SAFE DISTRIBUTED LOADS		IN TONS OF		ON ROLLED STEEL BEAMS	
		2240 LBS			
Span in Feet		SECTION			
		24" x 7	24" x 7 1/2	24" x 7 1/2	24" x 7 1/2
4	46	8	964	812	687 6
6	146	18	964	812	687 6
8	41	102	8	627	517 439
10	12	82	653	498	412 349
12	938	67	544	415	343 291
14	804	580	467	356	294 249
16	703	508	408	311	257 218
18	625	45	363	271	228 194
20	562	406	326	249	206 174
22	511	369	297	226	171 159
24	469	338	272	207	157 145
26	432	312	251	191	140 130
28	402	290	233	176	127 118
30	375	270	217	162	115 107
32	351	254	204	151	107 99
34	328	240	192	141	99 91
36	314	228	181	131	91 83
38	296	215	172	123	84 76
40	282	203	163	115	77 69
42	269	194	156	108	71 63
44	256	185	148	101	65 57
46	245	178	141	95	60 52
48	235	168	135	89	55 47
50	226	158	128	83	50 42

These loads conform to S.A.A. Code No. CAI-1939.

Loads above upper zig zag line have been reduced so that allowable shear stress is not exceeded.

Loads between zig zag lines are based on a safe stress of 8 tons per square inch.

Loads below lower zig zag line have been reduced so that deflection does not exceed 1/300th of span.

For beams with a concentrated load at centre, take one-half the tabular load.

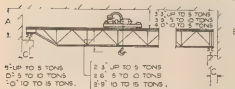
Top flange of beam should be supported sideways when the span of beam exceeds 20 times flange width.

SAFE CONCENTRIC LOADS		IN TONS OF		ON ROLLED STEEL BEAMS USED AS COLUMNS	
		2240 LBS			
Span in Feet		SECTION			
		24" x 7	24" x 7 1/2	24" x 7 1/2	24" x 7 1/2
6	177	136	16	958	818
8	59	118	00	795	738
10	136	97	81	622	584
12	12	77	639	480	453
14	908	67	504	379	353
16	738	495	402		
18	506				
20					
22					

These loads conform to S.A.A. Code No. CAI-1939 for columns with ends held laterally in both directions.

# JOHNS & WAYGOOD LIMITED

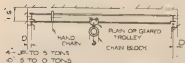
## ELECTRIC OVERHEAD TRAVELLING CRANES



TYPE	CAPACITY	SPAN IN FEET							
		0	20	30	40	50	60	70	80
A	5 TONS	4'	5'0"	5'6"	6'	6'6"	6'6"	7'0"	7'0"
	10	5'	5'7"	5'8"	6'1"	6'6"	6'6"	7'0"	7'8"
	15	5'	6'0"	6'1"	6'5"	6'9"	7'3"	7'7"	8'2"
B	5	5'	5'3"	5'8"	7'3"	8'2"	9'2"	10'1"	12'0"
	10	6'0"	6'11"	8'0"	8'11"	9'	10'10"	11'0"	12'9"
	15	6'6"	7'5"	8'4"	9'4"	10'6"	11'5"	12'5"	13'4"

15  
5

## HAND-OPERATED SINGLE BEAM TRAVELLING CRANES

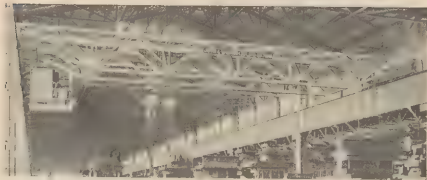


MADE UP TO 10 TON CAPACITY

## HAND-OPERATED DOUBLE BEAM TRAVELLING CRANES



DIMENSION	CAPACITY			
	10 TONS	5 TONS	3 TONS	10 TONS
E	4'	4'	4'	10'
PLAIN TROLLEY	5'	2'8"	2'10"	3'0"
GEARED	2'3"	5'0"	3'3"	3'6"

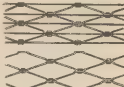


25-ton Crane at the Ford Manufacturing Company's Works, North Gosport

**JOHNSWAY GRID FLOORING** for Factory, Boiler and Power House Floors, etc. Constructed from 1" x 4" or 1 1/2" x 4" flat bars and in widths varying by 12" up to 3' 8" wide by 18' long.

**JOHNSWAY OPEN GRID FLOORING** for Walkways—similar to Grid Flooring, except that straight bars are omitted. Made in widths varying by 11" up to 1' 11 1/2" wide and 18' long.

Flooring can be cut and trimmed to suit floor layout on site.



**JOHNSWAY STEEL HUTS.** Manufactured in the following sizes:

TYPE	SPAN	HEIGHT TO ROOF	LENGTH			
			24'0"	36'0"	48'0"	AND IN MULTIPLES OF 12'0" THEREAFTER.
T20	20'0"	10'0"	24'0"	36'0"	48'0"	
T30	30'0"	12'0"	25'0"	37'6"	50'0"	
T40	40'0"	14'0"	25'0"	37'6"	50'0"	

Designed to use Timber or Steel Purlins and Girts. Supplied with Steel Framing Doors and Windows.

Timber Purlins and Girts, Corrugated Iron and Plumbers' Requirements by others.



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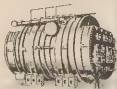
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6

CONSTRUCTORS OF: STEEL BUILDINGS - BRIDGES - CRANES - CHIMNEYS - CONDENSERS  
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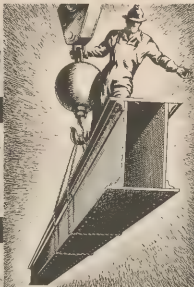
30,000 K.W. Condenser  
built for Victorian State  
Electricity Commission.



30 ton Plate Girders  
for a Victorian  
Railway Bridge.



Structural Steel Fac-  
tory Building in  
course of erection.



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IN THE FIELD OF

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12,000 gallon Petrol  
Storage Tanks for Com-  
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Commission, Nauru.



Welded Steel Plate  
Girder bridge over Mar-  
byrnong River, Footscray.

More-than-ordinary ability, plus sound engineering, long experience and good common sense are factors which have contributed to the success of Kelly & Lewis Ltd. in the field of Structural Steel.

A large competent staff and an extensive welding, riveting and fabricating plant are

available to execute any order, from its origination on the drawing board to its completion as a finished structure. When next considering plans for construction we invite you to share our experience and facilities as designers, constructors and consultants on any industrial or public utility project.





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Stephenson & Turner and W. A. M. Blackett,  
Architects.



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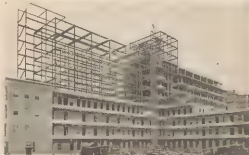
We fabricate all types of Steel Structures—welded, riveted or bolted, including Office and Mill Buildings, Bridge Trusses, Pressure Vessels, Boilers, etc.

We have been approved by Lloyd's Register of Shipping to manufacture classes 2 and 3 welded pressure vessels. Our works are equipped with modern plant, and are the largest in Victoria comprising:

Structural Department, Engineering Shops, Steel Foundry, etc. The facilities of all departments are available to fulfil the requirements of our customers in every branch of the engineering profession.

Large stocks of all Structural Sections are carried enabling us to fulfil orders promptly.

Technical Staffs are available, capable of advising on all Engineering problems and estimates can be efficiently and promptly rendered.



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Swanson Bros. Pty. Ltd., Builders.

H. Garnet Alsop, A.R.A.I.A., Architect.

Australian Paper Manufacturers Ltd.,  
Maryvale, Victoria.

S. Haunstrup & Co. Pty. Ltd.  
Builders.

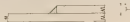
A.P.M. Ltd., Architects.



## ARC WELDING DESIGN DATA

## STRENGTHS OF WELDS TO CONFORM TO SAA CODE

MINIMUM THROAT THICKNESS "D"



PLAIN BUTT



SINGLE VEE



DOUBLE VEE

MINIMUM SURFACE OF CONTACT =  $\frac{1}{2}$ "  
 = NOMINAL FILLET SIZE "D"



SINGLE "U"



DOUBLE "U"

NOMINAL SIZE OF FILLET		THROAT THICKNESS		STRENGTH PER LIN. INCH OF WELD										THICKNESS OF MATERIAL	
				END WELDS					SIDE WELDS						
INCHES	MILLIMETERS	TENS.	COMP.	TENS.	COMP.	TENS.	TENS.	COMP.	TENS.	COMP.	TENS.	COMP.	INCHES	MILLIMETERS	
1/8	12.7	15	10	15	10	10	10	10	10	10	10	10	0.075	1/8	
3/16	14.3	20	13	20	13	13	13	13	13	13	13	13	0.09	3/16	
1/4	19.0	25	16	25	16	16	16	16	16	16	16	16	0.105	1/4	
5/16	25.4	30	19	30	19	19	19	19	19	19	19	19	0.125	5/16	
3/8	31.8	35	22	35	22	22	22	22	22	22	22	22	0.150	3/8	
1/2	38.1	40	26	40	26	26	26	26	26	26	26	26	0.200	1/2	
5/8	47.6	45	29	45	29	29	29	29	29	29	29	29	0.250	5/8	
3/4	57.1	50	32	50	32	32	32	32	32	32	32	32	0.300	3/4	

BUTT WELDS SHOULD PREFERABLY BE FLUSH GROUND  
 WHEN CARRYING FULL STRESS. SINGLE OR DOUBLE

"U" BUTT WELDS ARE FOR USE IN PLATES OVER 1" THICK

NOMINAL SIZE OF FILLET	THROAT THICKNESS	STRENGTH PER LIN. INCH OF WELD		THICKNESS OF MATERIAL
		TENS.	COMP.	
INCHES	MILLIMETERS	TENS.	COMP.	MILLIMETERS
1/8	12.7	15	10	1/8
3/16	14.3	20	13	3/16
1/4	19.0	25	16	1/4
5/16	25.4	30	19	5/16
3/8	31.8	35	22	3/8
1/2	38.1	40	26	1/2
5/8	47.6	45	29	5/8
3/4	57.1	50	32	3/4

THE ABOVE TABLES ARE PUBLISHED BY COURTESY OF THE EMF ELECTRIC CO. PTY. LTD.  
 AND STRENGTHS GIVEN ARE FOR THEIR "NEW ERA" ELECTRODES.



SLAB BASE

R.S.J. TO  
STANCHION  
AT CAPR.S.J. TO  
STANCHION  
ON SHANK

TYPICAL STRUCTURAL CONNECTIONS  
 SHOP WELDED & FIELD BOLTED OR RIVETED



SPANS UP TO 25'-0"



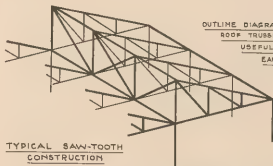
SPANS 25'-0" - 40'-0"



SPANS 40'-0" - 60'-0"

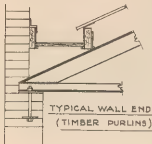


SPANS 60'-0" - 100'-0"



TYPICAL SAW-TOOTH  
CONSTRUCTION

OUTLINE DIAGRAMS OF VARIOUS TYPES OF  
ROOF TRUSSES INDICATIVE OF THE MOST  
USEFUL AND ECONOMICAL TYPE FOR  
EACH GIVEN SPAN AS APPLIED  
IN WELDED CONSTRUCTION



TYPICAL WALL END  
(TIMBER PURLINS)

BRICK WALL & BED  
WOOD SUPPORT

MS GLAZING BAR

GLAZING CUTTER IN  
MS STRAPS



GLAZING, GLAZING &  
CUTTING  
SAW-TOOTH ROOF



## RHEEM AUSTRALIA PTY. LIMITED

SYDNEY . . . MELBOURNE . . . BRISBANE

SHEET METAL FABRICATORS . . . HOT DIP GALVANIZERS . . . PRESSWORK  
STEEL BARRELS . . . SHIPPING PACKAGES . . . STEEL DRUMS . . . DECORATED  
PAILS . . . UNDERGROUND STORAGE TANKS . . . HOME APPLIANCES

### D.P.L. . . . DUAL PURPOSE LINTELS

The Building Trade has welcomed the introduction of D.P.L. Dual Purpose Lintels, recognising in this combination arch support and dampcourse a means of not only overcoming the inherent weaknesses of the conventional arch bar or M.S. angle together with the normal lead dampcourse, but as a factor whereby field labour costs may be reduced while more efficient technique is employed.



ISOMETRIC PROJECTION OF TYPE 'A' D.P.L.



TYPE 'A'



TYPE 'B'



TYPE 'C'

D.P.L. Dual Purpose Lintels are made in three (3) models, "A", "B" and "C", to suit the various types of standard window and door head construction.

#### Construction with D.P.L. LINTELS Mean Direct Savings . . .

. . . Check These Advantages

1. One single unit supports both skins of brickwork and at the same time provides adequate flashing, thus eliminating the use of lead, hastening construction and reducing costs.

2. As the flashing forms an integral part of the D.P.L. Lintel, there is no possibility of it being omitted or incorrectly placed through carelessness. Being made of heavy gauge steel, it is not easily damaged during the building construction.

3. The use of D.P.L. Lintels permits the first course of brickwork over an opening to be built on mortar, giving superior construction not possible with angle iron or arch bars if horizontal joint lines are to be maintained.

4. D.P.L.'s are light to handle and can be built in more quickly than either concrete lintels or steel angles and more conveniently than arch bars.

5. Each lintel is heavily galvanised by Hot Dip process (approximately 6 ounces to the square foot) after fabrication, ensuring protection against rust.

6. As the D.P.L. is a strong single unit it acts as an effective tie between the inner and outer skins of the brickwork.

7. D.P.L.'s include a built-in drip mould in the soffit, thus preventing water reticulating to the outside of the window head.

8. Mass production of D.P.L.'s permit low unit cost and reduce considerably field labour charges.

9. The D.P.L. Lintel is manufactured in convenient lengths to suit any brickwork opening from two feet to seven feet three inches wide.

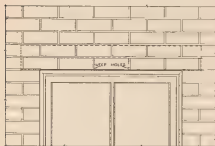
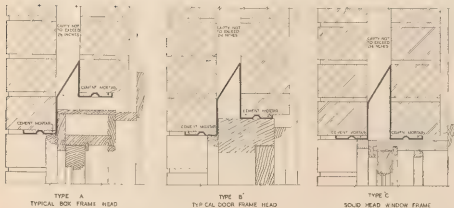
#### Stock Sizes and Gauges

3 ft. x 16 gauge	6 ft. x 16 gauge
3 ft. 6 in. x 16 gauge	7 ft. x 16 gauge
4 ft. x 16 gauge	7 ft. 6 in. x 16 gauge
4 ft. 6 in. x 16 gauge	8 ft. x 16 gauge
5 ft. x 16 gauge	

## APPLICATION OF D.P.L. LINTELS

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8



EXTERNAL ELEVATION OF TYPICAL WINDOW

## EXTRACT OF TEST REPORT, DEPT. OF PUBLIC WORKS, N.S.W. INVESTIGATION No 2834, DUAL PURPOSE LINTELS

A sample of the Dual Purpose Lintel of 16 gauge iron, heavily galvanised, was submitted for report as to the action of cement and lime mortar on the galvanising when maintained in moisture saturated atmosphere.

Ordinary building bricks embedded in and bedded by sand-cement mortar were cemented to one side of the lintel in a manner used in building practice, while in a similar manner bricks are bedded in sand lime mortar were cemented to the other side. After allowing sufficient time for the mortars to harden, the lintel, with bricks attached, was stored in the fog room (moisture saturated atmosphere at 75 deg. F.) for 30 months.

After the lapse of 30 months' storage in the fog room, the bricks were detached and the lintel examined for indications of corrosion. The lintel was found to be entirely free of any signs of corrosion after a 30 months' treatment as indicated above.

Chief Testing Officer,  
9/10/48

## Specification for Fixing Dual Purpose Lintels

Lintels are to be given a bearing of not less than 4½ inches at each end and the outer flange, for the wider openings, should be supported for 48 hours with timber toms to obtain a perfectly level soffit for face brickwork. At least four (4) courses of brickwork over the lintels are to be laid in cement mortar.

The trough of the flanges should be filled up flush with cement mortar before bricks are laid and at least two (2) weepholes are to be left in the vertical joints of the outside skin of brickwork.

Should the brickwork immediately over the openings support ends of floor joists or carry other super-imposed loads, the brickwork should be adequately reinforced within the horizontal joints.

As the width of cavities may vary slightly, it is advisable for the lintels to be placed centrally within the cavities in order to obtain the maximum amount of bearing for the brickwork on each flange.

DISTRIBUTORS FOR NEW SOUTH WALES—

FOX BROS. PTY. LTD.

276 PITT STREET, SYDNEY

Phone: MA 6811





**GATES and  
FENCING**

SECTION

**16**

SECTION

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CATALOGUES 1 to 4

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AUSTRAL Chain Wire, No. 10 gauge, employed as a barrier to prevent the entry of unauthorized persons to sports ground.

AUSTRAL Chain Wire is strongly woven of heavy galvanized wire. It is unbreakable and requires no maintenance.

## CHAIN WIRE DATA

Standard Heights — 36, 36, 48, 48, 60 and 72 inches

Standard Meshes and Gauges.

Wire

1/2 in.

1/4 in.

1/8 in.

1/16 in.

1/32 in.

1/64 in.

1/128 in.

1/256 in.

1/512 in.

1/1024 in.

1/2048 in.

1/4096 in.

1/8192 in.

1/16384 in.

1/32768 in.

1/65536 in.

1/131072 in.

1/262144 in.

1/524288 in.

1/1048576 in.

1/2097152 in.

1/4194304 in.

1/8388608 in.

1/16777216 in.

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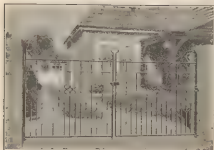
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## WROUGHT IRON PRODUCTS



AUSTRAL Wrought Iron Gates in complete harmony with the architectural character of the home.

AUSTRAL Wrought Iron Productions, distinguished by strength, ruggedness, and finish, are the result of modern machinery and modern manufacturing methods. Costs are far below those of hand wrought work.

## HAND GATES

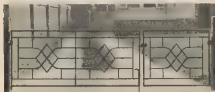


DESIGN 400



DESIGN 402

Design 400—2 in. square frames and bolting of various sections. Design 402—2 in. square frames and 1 in. round rods. Standard spacings are 3 ft., 3 ft. 6 in. and 4 ft. between posts or posts.



DESIGN 405

AUSTRAL Wrought Iron Double Live Hinge frames of 2 in. square and bolting of 1 in. square. All cut for perfect weld penetration, and with clean, smooth finish.

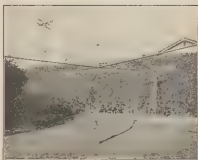


PANEL DESIGN P402, 133 in. high

Many designs available. Panels should not exceed 9 ft. in length. Driveway hand gates matching the fence panels can be supplied.

## ROTARY CLOTHES HOISTS

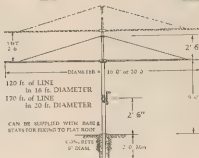
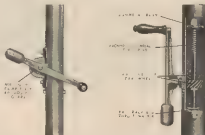
16



A typical installation of the AUSTRAL Rotary Clothes Hoist—Sail for a lifetime service.

By operating the hand-balanced rotator the whole length of the line is made available from the user's one position on the ground. A few turns of the handle raises the hoist for quick drying. Machine-cut gearing is totally enclosed so that no oil can come in contact with washing.

## ENCLOSED GEARS



## INSTALLATION

Erection is FREE in the Metropolitan area.

PHONES: FW 2171, FW 2172

**AUSTRAL WIRE FENCE & GATE Co., Pty. Ltd.**

# T. N. CHUCK WIRE FENCE & GATE CO. PTY. LTD.

3 BARKLY STREET, BRUNSWICK, N.10, VICTORIA

Telephone: FW1118 (2 lines)

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2

Chuck Chain Wire Fence.  
Chuck Ornamental Fabric Fence.  
Chuck Metal Driveway Gates.  
Chuck Metal Hand Gates.  
Chuck Wrought Iron Panels and Gates.

**CHUCK**  
Products

Chuck Factory Protection Fences.  
Chuck Machinery Guards, Theatre Shop-front and Window Guards.  
Chuck Metal Sky Signs.  
Chuck Ringknot Farm Fence.

## CHUCK CHAIN WIRE

Chuck Chain Wire is recommended for protective fencing for factories, mills, mines, country clubs, schools, parks, tennis courts, orchards, and dog yards, and for enclosures, window, door and machinery guards; also for factory and warehouse partitions.  
It is made of strongly woven wire, galvanized by the hot-dip process. It is unbreakable and requires no maintenance.

Standard Sizes.—In heights of 36, 42, 48, 60, and 72 inches, and in gauges and meshes as follow:

Mesh in inches	2	1	1 1/2	2	3	4
Gauge in inches	14	12	12	9	8	7
"	"	14	13	10	12	13
"	"	"	"	12	10	1
"	"	"	"	13	"	"

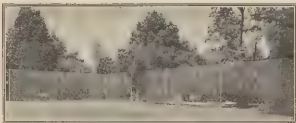
Special heights up to 18 ft. can be supplied if desired.

## TENNIS COURT ENCLOSURES

**CHUCK**

## TENNIS COURT ENCLOSURES

Chuck Chain Wire makes the best of fencing for Tennis Courts . . . strong . . . resilient . . . durable. This type of construction is equally suitable for any number of courts joined together and for general fencing of varying heights.



DETAIL OF CAP  
FITTED IN CORNER  
CHAIN WIRE



DETAIL OF GATE  
FITTERED WITH  
CHAIN WIRE  
SPECIAL ADJUSTING  
BOLTS

STANDARD SPECIFICATION FOR TENNIS COURTS  
NOTE: SIZE AS ILLUSTRATED IS 60 FEET x 30 FEET x 12 FEET HIGH  
THIS SIZE IS A MINIMUM—IF DESIRED WE CAN DESIGN  
COURTS TO SUIT YOUR SPECIAL REQUIREMENTS. EYE  
STANDARDS 2 1/2" O.D. DIAMETER TO EACH CORNER  
1 1/2" O.D. DIAMETER INTERMEDIATE STANDARDS  
1 1/2" O.D. DIAMETER STAYS AS SHOWN  
ALL STANDARDS PORTS STAYS SECURELY SET IN CONCRETE  
SPACING OF PORTS ETC. AS INDICATED ON SIDE SKETCH  
N°3 TWISTED CABLE OF N°9 GAUGE GALVANIZED WIRE  
CHAIN WIRE MESH 2"x1/2" GAUGE TO BOTH SIDE LINES  
CHAIN WIRE MESH 1"x1/2" GAUGE TO EACH END  
NOTE: THIS CHAIN WIRE ALWAYS KEEPS ITS SHAPE  
N°12 GATES UNDER STAYS COVERED WITH CHAIN WIRE  
NOTE: PLAN DRAWN ON RIGHT HAND SIDE OF THIS SHEET  
(SCALE 1/8" TO FOOT) GIVES ALL MEASUREMENTS DETAILS ETC.  
NECESSARY FOR LAYING OUT CORRECT SIZE COURTS

We undertake the complete erection of Tennis Court Enclosures in any part of Victoria and will be pleased to quote for any size in accordance with our own specification, or for any special requirements.



## Architects and Builders!

. . . you can confidently specify CHUCK for all Building Requirements and be sure of SOUND CONSTRUCTION, DURABLE MATERIAL and DEPENDABLE SERVICE.

REKDAY'S CATALOGUE

# CHUCK

## CHAIN WIRE PROTECTIVE FENCING

for Machinery Guards, Switch-  
board Guards, Factory Fences and  
Metal Gates, Sliding and Lifting  
Gates, Window Guards, Doorway  
Guards, etc

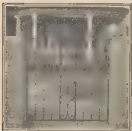
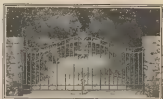


16  
2



### Chuck Wrought Iron Work

We specialise in  
the design and  
construction of  
Wrought Iron,  
Cast Iron, Panels,  
Horned Gates, Bulb  
and Letting  
Screens, etc. for  
all classes of  
Building Con-  
struction. Chuck  
Wrought Iron  
work is foremost  
in original design  
and sound work-  
ship.



T. N. CHUCK WIRE FENCE & GATE CO. PTY. LTD.

3 BARKLY STREET, BRUNSWICK, N.10

Phone: FW1118

TAMMAY & CATALOGUE

# E. E. HAYDON & CO.

ROBERTSON STREET, KENSINGTON, VICTORIA

Telephone: Central 5096-5097

*Specialists in the manufacture of individually styled*

WROUGHT IRON GRILLS and GATES, FLY-WIRE DOORS, STAIR BALUSTRADES, etc.

Many beautiful examples of our work are to be seen in Private Residences, Public Buildings, Churches, Mortuary Parlours and Schools.

Our knowledge and craftsmanship in the design and fabrication of wrought iron, stainless steel and bronze metal work, has attained an enviable reputation for us among leading architects.



Stainless Steel Gates to Niche Loggia at Crematorium, Springvale, Victoria. Stainless steel is suited to both interior and exterior work.

Architect:  
D. F. Cowell Hon.

Hand Wrought Iron Fly-Wire door is exclusive mononette of Toorak, Victoria. Bronze Fly-Wire is fitted behind the wrought iron construction.

Architect:  
Edward F. Bilsen & Co.



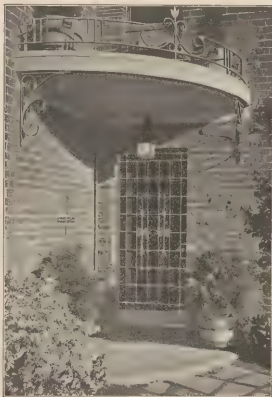
OTHER PRODUCTS INCLUDE: Wrought iron furniture, interior and exterior lanterns and light fittings, fireside furniture including screens, dogs and irons, and all classes of builders' ironwork.

### SERVICE

In order that we may render efficient service to our clients, we maintain a thoroughly competent technical staff, who will be pleased at any time to give suggestions and advice regarding fencing problems, and to submit designs and estimates. This service is free, and gladly given.

We are prepared to undertake the erection in the metropolitan areas of all types of Wire Fencing, including timber work, pipe framing, straining, etc., and have a staff of experienced and expert workmen, who are fully qualified to execute any work of this nature.

A telephone ring will bring our representative to see you.



### WROUGHT IRON WORK

BY

### Cyclone Company of Australia Pty. Ltd.

#### MELBOURNE:

Opposite Street, Abbotsford.  
Telephone: JA 8031 (11 lines).

#### SYDNEY:

Marley Ave., Rosebery.  
Telephone: MU 1431 (6 lines)

#### ADELAIDE:

51 Elizabeth Street  
(off Waymouth St.)  
Telephone: Cent. 4475 (3 lines).

#### PERTH:

Cor Brown and Lime Sts.,  
East Perth.  
Telephone: B 4121 (2 lines)

# "Cyclone" CHAIN WIRE

For INDUSTRIAL, MUNICIPAL  
and DOMESTIC FENCING and  
TENNIS COURT ENCLOSURES

## CHAIN WIRE DATA

Strongly woven of special galvanized wire of the highest rust-resisting quality, "Cyclone" Chain Wire combines strength, flexibility, and neat appearance, and, as it requires no maintenance, it meets all requirements demanded in modern industrial, institutional, municipal, and domestic fencing.

Heights.—"Cyclone" Chain Wire is manufactured in standard heights of 36, 42, 48, 60 and 72 inches. However, other heights up to 16ft. and in various meshes and gauges, varying from 4in. mesh, 17 gauge, to 6in. mesh, 4 gauge, are available.

Standard Meshes and Gauges are as under—

Mesh	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Gauge	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Selva.—"Cyclone" Chain Wire is supplied with knuckled selva unless barbed selva specified. Barbed selva is only supplied on Chain Wire of Nos. 8, 9, 10 or 11 gauge. (Note.—See information sheet No. 2 for fence construction using Chain Wire with barbed selva.)



KNUCKLED SELVA

BARBED SELVA

## "CYCLONE" PATENTED OFFSET FITTINGS

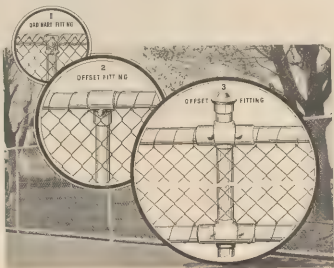
Patent No 543/37.

These patented fittings, exclusive to the Cyclone Company, allow the intermediate posts in a line of fence to be set back 8 in., thus permitting the chain wire to be laced underneath the top rail and on top of the bottom rail, instead of on the face.

The advantage is obvious, as, in addition to ensuring a much neater job, the possibility of damage to the wearing apparel of spectators at sports ovals and the like is eliminated. Illustration No. 1 shows portion of a fence erected with ordinary fittings,

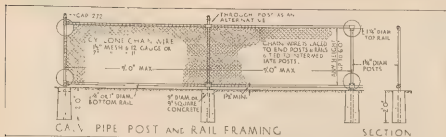
where the chain wire is laced on the face of the rail.

Illustrations No. 2 and No. 3 show the neat appearance achieved by the use of the "Cyclone" patented offset fittings.

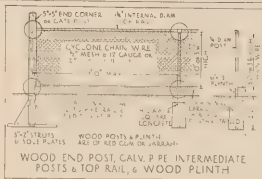


# CHAIN WIRE FENCING—DOMESTIC

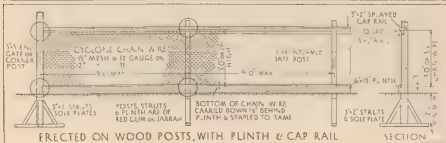
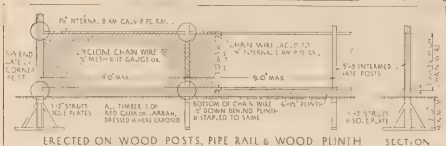
16  
4



Above and at  
Right—  
CONTINUOUS  
RAIL FENCING  
WITH OFFSET  
FITTINGS



Below—  
CHAIN WIRE  
FENCING ON  
TIMBER  
FRAMING

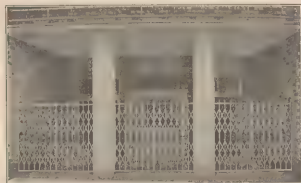








## 4



Collapsible Gates erected by Cyclone Company at entrance  
to a suburban Town Hall

Theatres  
Municipal Buildings  
Shop Entrances  
Office Buildings  
Lifts, etc.

**ARCHITECTURAL  
METAL, Etc.**

SECTION  
**17**  
SECTION

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CATALOGUES 1 to 4

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# AUSTRAL BRONZE COMPANY PTY. LIMITED

Established 1914

Head Office and Works

BRASS AND COPPER ROLLING MILLS, O'RIORDAN ST., ALEXANDRIA N.S.W.

Branch Office:

ADELAIDE - BRISBANE - PERTH

Branch Office and Bulk Store

161-163 KING STREET, MELBOURNE

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1

For Other Products, See Index)

## EXTRUDED METALS

### History

Although it is recorded that the extrusion of Copper and Copper Alloys in the form of bars and rods was invented in 1894 (by the late Mr. Alexander Dick), it was not until 1921 that the production of Extruded Rods, Bars and Special Sections was undertaken commercially in this country—the pioneers being Austral Bronze Company Pty. Limited, who established this particular industry at their extensive works in O'Riordan Street, Alexandria, N.S.W., where some thousands of tons of Extruded Sections have been produced for various industries throughout the Commonwealth.

### Manufacture—Characteristics

The Extrusion process consists of forcing metal, heated to a semi-plastic state, through a steel die by hydraulic pressure, which produces shapes with the following advantages:

The Bars obtained are uniform in cross section, with sharp corners and clean cut lines, accurately reproducing the architect's designs.

The surfaces are smooth and sufficiently true to dimensions to require little, if any, machining.

Extruded shapes being wrought under great pressure, are free from blow-holes, and other defects usually common in sand-casting, and, in the case of bronze, have an ultimate tensile strength in excess of 25 tons per square inch.

Extruded shapes can be used in thinner cross sections and finished with less labour and are consequently not so expensive as the majority of machined castings. "Austral" Extruded Architectural Bronze Sections have a mature golden colour which can be artificially coloured by the fabricators to obtain various effects, such as statue bronze, Verdé Antique, Flemish Brass, or other oxidized finishes.

### Service

Austral Bronze Company Pty. Limited have spared no expense in developing the extrusion of Bronze, Brass and Copper for architectural, electrical and general engineering purposes, and lithographs detailing over 2,200 Special Sections supplied to Australian and New Zealand users can be had on application to the Company, who will be pleased to advise clients on all matters relating to extruded metal sections and their applications, and to submit prices on receipt of particulars as to requirements.



TRANSPORT HOUSE SYDNEY

"Austral" Extruded Architectural Bronze Sections were used throughout in the fabrication of the windows and main door of this building.

REDA'S CATALOGUE



"Austral" Extruded Bronze Sections for Shop Fronts, Counterscreens, Casements  
and all other Architectural Requirements



17  
2

## CLAUDITE ARCHITECTURAL PORCELAIN

### *The Most Versatile Material To-day*

**CLAUDE ARCHITECTURAL PORCELAIN** (a product of Claude Neon Ltd) was introduced in Australia a year or so before the war. It won immediate acceptance among enterprising designers and in Sydney, particularly, a number of the city's most distinctive shop fronts erected during that period employed Claudite as facing material. At the same time, a variety of other applications of Claudite, ranging from facades and trim on theatres and industrial buildings to the encasing of columns, block lettering and plaques (as in the King George V Memorial Hospital above) demonstrated the extreme versatility of this colourful and durable material. Today, six or seven years later, an inspection of these buildings shows the Claudite facing to be in exactly the same condition as when installed, substantiating the claim that the colours and surface of Claudite Architectural Porcelain are of lifetime permanence.

**MANUFACTURE.** Claudite Architectural Porcelain consists of flanged panels (flanges approx. 1" deep) to which fixing lugs are welded. The panels are formed from 16 or 18 gauge special untempered iron in which successive coats of vitreous ("porcelain") enamel are sprayed and fused at very high temperature, giving a business flint-hard surface that is easy to clean, does not fade or dull, and will withstand wear or damage by any ordinary means. The finish is the same as found on chinaware, baths, basins, etc and is not to be confused with "baked" enamel. It can be supplied matt (light colours only) or glossy (all colours).

**SHAPES AND SIZES.** Being formed by sheet-metal working processes, practically any shape can be easily and inexpensively produced. Experience has shown that size of panels should not exceed 8 sq ft—practically any dimensions when produce this area being acceptable.

**COLOURS.** A virtually unlimited range of pure, beautiful colours both brilliant solids and subtle tints, is available. The colour shades are permanent so that the colours are permanent and will not fade.

**FIXING** is by screwing to timber battens. Joints are filled with mastic cement. Positioning of fixing lugs and all fixing details are worked out by our draftsmen from your plans. Fixing may be done by contractor or Claude Neon will supply and fix.

**LETTERING.** Built-up block lettering in Claudite can be supplied to any design. Highly finished lettering, large or very small, (as for inscriptions, plaques, notices, etc) can be painted or written on the surface and fired in with the finish coats. Decorative designs of any degree of complexity and combining, within practical limits, as many different colours as desired (as for murals, counter faces in cocktail and powder bars, etc) can be similarly applied and permanently fused right into the surface of the material.

**COLLABORATION.** We strongly advise that you consult with a Claude representative before finalising your design. Many details of manufacture and fixing can then be discussed whilst the design is still in the provisional stages.

## CLAUDE NEON LTD.

2 ALBION RD., HANDWICK, N.S.W.; FEEL ST., BERRARIE, Q'LAND.; 1 ANZAC HIGHWAY, YESWICK, S.A.; ONE, STIRLING HIGHWAY AND BAY RD., CLAREMONT, W.A.; 248 SANDY BAY RD., SANDY BAY, TASMANIA; CLAUDE NEON LIGHTS (VIC.) LTD., 68 DORCAS ST., 5TH, MELBOURNE, VICTORIA.

# AUSTRALUCO ALUMINIUM ALLOY EXTRUDED SECTIONS

17  
3

Australuco Aluminium Alloys are being produced with strengths higher than structural steel at one-third the weight. This, and their non-corrosive properties, makes them ideal for structural applications, particularly in transport where a

reduction in structure weight means greater payloads or lower running costs. Extruded sections used in decorative rôles represent a saving of time and material through the elimination of extensive machining and other processes.

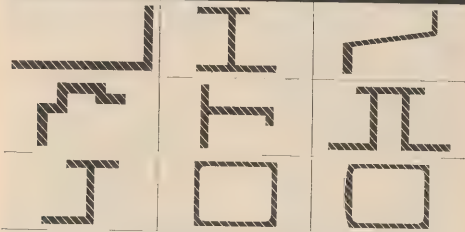
## ★ Structural

The sections shown are of the type commonly used in structural engineering. In addition, variations of these types such as bulb angles and bulb tees are available. For standard sizes available refer to British Standard 7161:1944 or the "Australuco" Handbook.



## Architectural

Of the range of architectural sections available, these for window casements and door styles are illustrated. Attractive appearance, natural or anodized, and non-staining effect on its surroundings, are two distinctive features of aluminium in architecture.



UNLIMITED SHAPES AVAILABLE BY EXTRUSION PROCESS. The shapes shown, not to scale, are merely representative, and the variety of shapes which can be extruded is virtually unlimited. There are, however, some limitations on size, the maximum being that which can be enclosed in a 9 1/2 inch diameter circle. Limitations on thickness are also imposed by the size and shape of the section, the tolerances to which it is to be produced and the alloy. The limits shown in the table cover the sizes which can be commercially extruded.

Diameter of Circumscribed Circle, ins.	0-2	2-4	4-6	6-8	8-9 1/2
Minimum thickness for Alloys AA25, AA50S, AA65S, ins.	.040	.050	.060	100	.200
Other alloys, such as AA175 and AA26S ins.	.060	.094	.125	.250	.312

It is sometimes possible to exceed these limits, and where this is desired advice should be obtained from our Technical Service Department.



## AUSTRALIAN ALUMINIUM COMPANY

PROPRIETARY LIMITED

(Incorporated in the State of Victoria)

GENERAL OFFICES AND FABRICATION DIVISION: GRANVILLE, SYDNEY, N.S.W.

AL. 66 48

# Wunderlich Limited

## Manufacturers of ARCHITECTURAL METALWORK

Administration: BAPTIST STREET, REDFERN SYDNEY, N.S.W.

## Showrooms and Offices:

SYDNEY: Baptist Street, Redfern  
 5TH MELBOURNE: 210 Hanna Street.  
 ADELAIDE: Grote and Morphett Streets.  
 PERTH ASSOCIATES: M. L. Brabant &  
 Wunderlich Ltd., Lord and Short Sts.



## Showrooms and Offices

BRISBANE: 106-110 Brunswick Street, Valley  
 NEWCASTLE: King Street (near Auckland  
 Street)  
 HOBART: T. & G. Building,  
 Collins and Murray Streets  
 LAUNCESTON: 137 Clementine Street

**Products:** This classification includes a wide range of products for Architectural purposes and for use in the building industry. It comprises both stock materials and the vast variety of decorative products in metal executed to the designs of Architects, or our own staff of designers.

**METAL CEILINGS:** For interiors and awnings.

**Stock Designs:** Wunderlich Metal Ceilings are manufactured in paint-primed steel and galvanised steel—the latter for use as Awning Ceilings or other Ceilings in exposed positions—in a wide variety of designs comprising Panellings, Diaper Designs, Panels, Borders, Cornices, Soffits, Mouldings and Centreflowers. The patterns include modern and period designs.

**Stock Sizes and Weights:** Ceiling designs are made in sheets 6ft. x 2ft., and 6ft. x 3ft. Panels 2ft. x 2ft. and 3ft. x 3ft., and Cornices; Mouldings, and Soffits in lengths of 6ft. Metal Ceilings weigh approximately 5 lbs. to the square yard.

**Special Ceilings:** Ceilings in ALUMINIUM, Steel, Zinc, Copper or Bronze to Architects' drawings or designs by Wunderlich draftsmen are specially manufactured as required.

**Qualities and Advantages:** An ordinary tradesman can erect Wunderlich Ceilings, for all joints consist of tight-fitting lapped beads, which obviate the use of cover mouldings and offer no refuge for dust or vermin. Once erected, the ceilings cannot crack, warp, flake, rot or fall down. They are safe always and a highly efficient fire retardant. The materials are fixed to battens and can also be applied over faulty lath and plaster ceilings without disturbance of the existing ceilings and without dirt or bother. Oil paints only should be used for painting.

**Designs, Estimates and Fixing:** On request, sketch designs or working drawings (showing spacing of battens and application of materials), together with estimates, will be furnished for the ceilings either fixed or unfixed.

**METAL SPECIALITIES OF STOCK DESIGN:** Wunderlich speciality metal products of stock design are widespread in their application. They include:

Galvanised Exterior Wall Linings, patterned to imitate Roughcast, Rockface, Brueckwerk, Shingle and Fibersale in sheets 6ft. x 3ft. (and in some cases, 6ft. x 2ft.)

Wall Tile Sheetings, in Steel and Galvanised patterned to represent 4in. x 4in. and 6in. x 2in. wall tiles in sheets 6ft. x 2ft.

Interlocking Roof Tiles in Zinc, Copper and Galvanised Steel.

Hiprols and Crestlings and Friezes in Zinc and Galvanised.

Finale and Weather Vanes in a large variety of designs Ventilators, comprising Louvered Vent Panels, Up-draft Roof Cows, Outlet and Inlet Vents, Wall and Ceiling Ventilators, Vent Nidging.

Perforated Ventilating Sheetings in Galvanised, Zinc or Copper.

Skylights, either fixed or ventilating types.

Glasz Bars, in Metal for Glass Roof Construction.

Shopfront Mouldings and Countersoling, etc., in Stainless Steel, Silverite, Brass, Bronze, etc.  
 Awning Fascias, in Galvanised Steel, Aluminium, Zinc, Copper, etc.  
 Acroteria, Gargoyles, Crockets, Lion Heads, either stamped or cast in various metals.

### ARCHITECTURAL METALWORK

To stock and special design. General Architectural Metalwork, comprising work in Bronze, Copper, Brass, Stainless Steel, Aluminium, Zinc and Galvanised Steel, with material, polished, oxidised, or Enamelled (painted) finish, including also Bronzework decorated with vitreous enamels available in a wide range of imperishable colours, also anodised aluminium.

The products include

Built Metalwork

Stamped Metalwork

Pressed Metalwork

Cast Metalwork

Drawn Metalwork

Metalwork Fabricated from Extruded Sections, etc., to form

Doors, Surrounds, Entrance Treatments.

Grilles, Desks, Stools.

Directory Boards.

Mail Boxes and Letter Chutes.

Push Bars, Counter Screens.

Kick Plates, Balustrading, Handrails, Ecclesiastical

Work, Altar Gates, Lecterns, Spandrel Panels.

Memorial Tablets, Urns, Vases, Skirtings.

Architraves, Picture Rails, Soap-on Mouldings.

Roofing, Roll Cap and Intercap, Awning Fascias.

Shopfronts, Elevator Housing, Linen Chutes.

Monumental Bronzework, Rolls of Honour.

Pressed Metalwork, embracing Standard Pressed Steel Partitions, Door Frames, Doors, Architraves, Picture Rails, Skirtings, Spandrels, and an endless variety of work capable of being pressed in furniture steel or similar steels.

Note: Refer to separate sections for details of Metal Windows, Metal Door Frames, Sinks and Kitchen Cabinets.

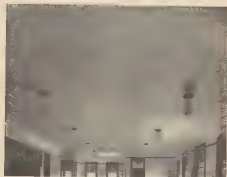
Heat Treated Aluminium Alloy Casting: The necessary plant for casting and heat treating Aluminium Alloys is available to engineers, etc., who require heat treated castings produced to a determined specification.

Facilities: Modern plants for carrying out all classes of Architectural and Industrial Metalwork are located in each capital city—see addresses above. Estimates furnished on receipt of drawings, or, if desired, sketch designs prepared, free of charge, by experienced Wunderlich draftsmen, and submitted with a tender for the execution of the work entailed. Ask for complete information and Catalogue relative to any of the above-mentioned products, or call at our Showroom and examine actual examples of Wunderlich craftsmanship.

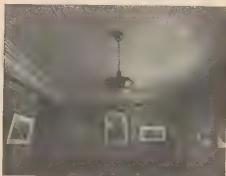




Aluminium Awning Fascia and Ceiling  
David Jones' Men's Store, Sydney.  
Architects Mackellar & Partridge



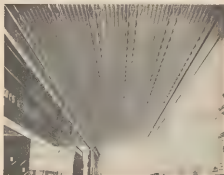
Modern Metal Ceiling Stock Design.  
To Stewart & Lloyds' Office, St. Leonards, Sydney  
Architects Pitt & Meeweather



Metal Ceiling to Residence at Sydney.  
Note.—This ceiling was applied direct over a faulty  
ceiling of lath and plaster.



Dedicated Bronze Awning Ceiling and Fascia.  
Sydney Morning Herald Building, Sydney.



Galvanized Awning Ceiling of Stock Design



At Left—  
Anodized Aluminium Balustrading to Passelators, David Jones' Men's Stores, Sydney.  
Architects—  
McKeller and Partridge



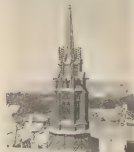
At Right—  
Metal Balustrading to Residence at Waverton North, Sydney.  
Architect—  
John H. H. H.



Modern Metal Letters,  
Architect—Samuel Lipson



Mail Boxes and Letter Chutes  
Made to Stock or Special  
Design



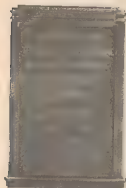
Copper Façade to St Stephen's  
Church, Sydney



Marble Entrance Doors to New London Theatre, Sydney



Metal Entrance Surround, Doors, Façade and Letters to  
New South Wales Railways Building.



□x dixed Bronze Nameplate.



Oxidised Bronze Dedication Plate.



Aluminum Alloy Castings.



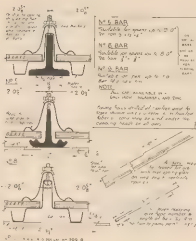
Bronze Vase, 5 1/2 x 11 1/2 x 10 1/2, Namagata



Cast Bronze Grille—Other Stock Patterns  
and Sizes Available



Standard Pressed Steel Pillars  
N.S.W. Government Railways Administrative Buildings



Wonderful Glazing Bars.

# Wunderlich Limited

Manufacturers of

## PRESSED STEEL DOOR FRAMES

Address: BAPTIST STREET, REDFERN, SYDNEY

Branches at: MELBOURNE, BRISBANE, ADELAIDE, NEWCASTLE, HOBART, LAUNCESTON

### SPECIFICATION:

**Standard Sizes:** Frames made to suit Standard Door Sizes.

**Standard Sections:** Subject to variation in width as indicated.

**Material:** 18 ggc. or 16 ggc. Sheet Steel as specified.

**Construction:** Pressed Sections mitred, fitted and Electric Arc welded, with joints ground flush after welding. 3/16in. reinforcing plates fitted ready to receive hardware (striking plate, hinges, door checks) supplied by client. Metal anchors fitted as required.

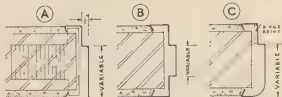
**Finish:** All frames bonderized and sprayed one coat of first quality anti-corrosive paint.

When ordering, specify in relation to each Door Frame:

(1) Door Size (HxDxW), (2) Section of Frame and width, (3) Wall thickness, (4) Gauge of Metal, (5)

Whether Right or Left hand, (6) Types of Locks.

Hinges and Door Checks to be used (submit samples) and positions, (7) Positions of anchors, (8) Finish at base of frame-flush, etc.

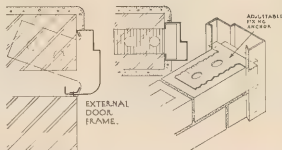


TYPICAL SECTIONS



Use the following convention to determine Right or Left Hand —

Looking towards the rebate so that door opens towards observer:  
A Left Hand Frame will have hinges left  
A Right Hand Frame will have hinges right



**METAL DOORS**

SECTION

**18**

SECTION

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CATALOGUES 1 to 4

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# AUSTRAL ROLLER SHUTTERS PTY. LTD.

## GREEK STREET (REAR OF GRACE BROS.) GLEBE, SYDNEY

Telephone: MW 1228

## REPRESENTATIVES

QLAND.—A. Anderson, Heather Street.  
Winton, Brisbane

S.A.—E. P. Newman, Kitchner's Buildings.  
King William Street, Adelaide.

NEWCASTLE.—F. W. Baddington & Sons  
Pty. Ltd., 33 Watts Street, Newcastle.

W.A.—Saunders & Stuart Pty. Ltd. James  
Street, Perth.

## PRODUCTS

STEEL ROLLER SHUTTERS.

AUTOMATIC CLOSING STEEL ROLLER SHUTTERS—Fire Underwriters' Types.

WOOD ROLLER SHUTTERS.

TIN-CLAD FIRE RESISTING DOORS.

## WOOD ROLLER SHUTTER CONSTRUCTION

Standard—2 in. Redwood Slats lined throughout with copper and webbing banding screwed at each slat, operated by spring balanced roller with or without chain control.

## STEEL ROLLER SHUTTER CONSTRUCTION

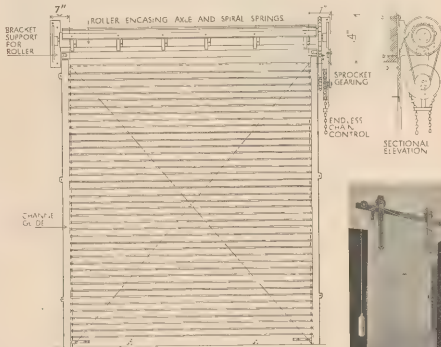
Standard Shutters—2 in. x 21-gauge, interlocking steel slats, balanced by steel spiral springs encased in steel tube roller operated by chain control and complete with locking bolts.

Heavy Section Slat Shutters—3 in. x 18-gauge interlocking slats for large openings. Heavier in construction throughout than Standard Shutters.

## STANDARD SHUTTER FIXING—CLEARANCES NECESSARY

Steel Shutters—7 in. at sides—14 in. above head of opening.

Wood Shutters—8 in. at sides—14 in. above head of opening



Elevation from inside of opening showing space required at head and sides of openings up to 12 feet wide. Wider openings require 9 inches each side.

## AUSTRAL STEEL ROLLER SHUTTERS

HARVEY &amp; CATALOGUE



Tin Clad Fire Resisting Door.

# AUSTRALIAN METAL PRODUCTS PTY. LTD.

GENERAL OFFICE AND PLANT.

REAR NICHOLSON & SCOTCHMER STREETS  
NORTH FITZROY, VICTORIA

Inter State Distributors:

ADELAIDE—Messrs. Geo. Willis & Co. Ltd.,  
Gilbert Place, Adelaide, South Australia.

BRISBANE—Mr. C. F. Willers, 36 Eagle Street, PERTH—Messrs. Geo. Willis & Co. Ltd., 113 St.  
Brisbane George's Terrace, Perth, West. Austral.

HOBART—Barringer & Lansel Pty. Ltd., 257-259 Elizabeth St., Hobart.

LAUNCESTON—Barringer & Lansel Pty. Ltd., 100 Wellington St., Launceston.

18

2

## "Dowell"



Panel Type

"Dowell" Panel Doors are constructed of 18-gauge polished furniture steel sheets forming 5 in. stiles and top rail, and 10 in. bottom rail. No wood core is used in the construction—the framing members being hollow. Each panel consists of two sheets of 18 gauge polished furniture steel with asbestos core between. A double-faced insertion mould forming a frame is built in between the panel and the stiles and rails; this construction interlocks each section of the door to the other and is a special feature of the "Dowell" panel door; the corners are mitred and welded and cleaned off flush. Doors are reinforced to take hinges, locks, etc. "Dowell" doors, being made of 18-gauge metal, finish perfectly flat and will stand up to rough usage; they are recommended where a high-class finish is required.

## "Standwell" and "Dowell"

### FIRE DOORS

"Standwell" and "Dowell" Fire Doors have been approved by the Fire Underwriters' Association of Australia and the building authorities of the respective capital cities of Australia for vertical shafts, such as staircase wells and lift wells.

This type of door has overcome the difficulty of disguising the old type of unsightly, tin-clad door without detracting from its fire resisting qualities. "Standwell" doors (12 in. thick) and "Dowell" doors (12 in. thick) are highly pleasing in design and when hung in metal frames present a doorway of outstanding appearance and utility.



"Standwell" Doors in a Commercial Building

## "Standwell"



Panel Type

"Standwell" Doors are constructed of 5 in. wide stiles and top rail and 10 in. bottom rail. Stiles and rails consist of a wood core of non-resinous, well-seasoned timber encased with a drawn metal covering of galvannealed steel sheets (rust resisting), flanged in such a way as to meet together on the inside of all stiles and rails. The junction of the wood core at the stiles and rails are grooved both sides, into which the metal casing is ingeniously entered to form locking joints. These joints are lead-filled and cleaned off smooth by a finishing process.

Each panel consists of two sheets of galvannealed steel with asbestos sheet core between and formed in such a way as to come flat together at flanges of stile and rail. The whole is spot welded together at intervals, thus hermetically sealing the wood core in the metal casing.

## Erection of "Standwell" and "Dowell" Doors

**ERECTION OF FRAME:** Before erecting door and frame the workman should not be in the frame as the work proceeds as desired. It only takes for a 30 lb and better door, but a saving of time in building construction. Any amount of work or greater after erection is avoided.

**SWINGING DOOR:** The swinging door is hung in the frame with a pair of 4 in. half surface door hinges fixed to join a metal store screw on one side and the other welded through door. The base of operation of the doors on these hinges is a feature of the installation.

**SLIDING DOOR:** Sliding doors are hung by a ball-bearing roller on a track running on a 4 in. x 4 in. channel iron. The roller is fixed to the door which operates when the door is closed.

No more noise, scratching and sweating in the sliding door.

REVISED CATALOGUE



Flush Type

"Dowell" Flush Doors are constructed also of 18-gauge polished furniture steel sheets; externally, the doors are formed of two sheets of metal locked together on the edge. The joint just formed is completely welded and cleaned off flush. Internally, the doors are ribbed and reinforced vertically at 5 in. centres, so as to secure the necessary rigidity and to finish with a perfectly flat surface. All doors are lined with locks, hinges, etc. These doors meet the requirements of modern design; recessed lines, whether vertical or horizontal, can be added and, if necessary, insertion moulds of bronze, nickel silver, stainless steel or aluminium can be applied, giving the doors character and distinction.

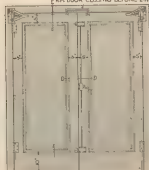
### FRAME

Each door is hung in a pressed steel combination jamb and astragal of 18 gauge metal. These frames can be designed to suit any condition of opening. A feature of the single-door installation is that the two point contact and self-closing equipment is embodied in the frame, thus eliminating fittings on the face of the door.

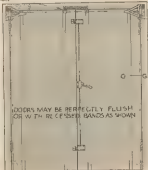
### FINISH

Any kind of finish can be obtained, such as lacquer or grained enamel to colour desired. The quality of metal used lends it to the highest degree of finish possible.

TIMING GEARS PREVENTS  
R.H. DOOR CLOSING BEFORE L.H. DOOR

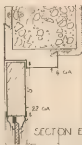


DOUBLE LEAF STANDWELL OR  
DOWELL PANEL FIRE DOOR



ALTERNATIVE DOWELL FLUSH  
TYPE FIRE DOOR

DOORS MAY BE PERFECTLY FLUSH  
OR WITH RECEIPTED BANDS AS SHOWN



SECTION E-E



SECTION F-F

FINISHED FLOOR

FRAME 8" BELOW  
FINISHED FLOOR

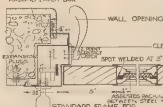
HEAVY DUTY TAIL SPRING CLOSERS  
EQUIPPED WITH FUSIBLE LINKS WHERE  
FULLY AUTOMATIC INSTALLATION



SECTION A-A

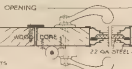
DOWELL HOLLOW METAL  
PANEL DOOR CONSTRUCTION

CONCRETE CUT BACK  
AROUND LATCH BOX



SECTION B-B

SINGLE LEAF STANDWELL OR  
DOWELL PANEL FIRE DOOR



SECTION D-D

"STANDWELL" WOOD CORE DOOR CONSTRUCTION



SECTION C-C

FRAME CAN BE MADE  
TO SUIT ANY CONCRETE  
OR BRICK WALL THICKNESS

SCALE OF  
DETAILS 0 1 2 3 4 INCHES

AUSTRALIAN METAL  
PRODUCTS PTY LTD

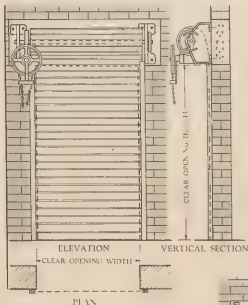
DETAILS OF STANDWELL & DOWELL HINGED FIRE DOORS  
CLOSING & LOCKING EQUIPMENT

FIRE DOORS





## STEEL ROLLER SHUTTERS



### Gear-Operated STEEL ROLLER SHUTTER

Manufactured in any size up to 22 feet wide, with curtain constructed of either 17 or 21 gauge slots. Shutter curtains perfectly spring balanced and fitted with self-locking worm reduction gearing, with chain wheel and endless chain. Shutters supplied with either right or left hand geared operators.

Wicket gates can also be fitted either hung at side or fitted in centre to lift out

#### CLEARANCES REQUIRED

- 16 in. headroom above clear opening height
- 12 in. clear on gear bracket side
- 9 in. clear on plain bracket side

#### TREVOR STEEL ROLLER SHUTTERS

are safely manufactured, completely erected, and thoroughly tested in our engineering works at North Melbourne

All our shutters are a high class engineering specialty. Extra large special shutters are mounted on ball-bearings with machine-cut gearing running in oil bath.

Contracts completed include over 300 large shutters supplied to Melbourne Harbour Trust. Trevor shutters can be used in all types of buildings, cargo sheds, store houses, garages, factories, power stations, market entrances, etc.

### Spring Balanced STEEL ROLLER SHUTTER

Are manufactured in sizes up to 72 square feet in area and are operated by pushing up with grip-handles at bottom plate

Larger shutters than 72 square feet are fitted with chain wheel and chain

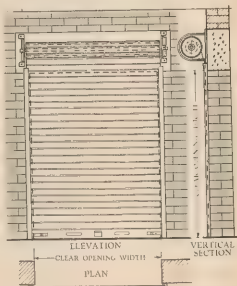
Bottom plate fitted with locking bolts on either the inside or outside as desired. Balance of shutter is maintained in any position by springs fitted with adjustable tension wheel

Curtains constructed of 21 gauge slots.

#### CLEARANCES REQUIRED

- 13 in. headroom above clear opening height
- 8 in. clearance at jambs

Recommendations, Plans and Prices on Application  
 Any extras can be supplied and special designs executed.



# WORMALD BROS. PTY. LTD.

FIRE PROTECTION ENGINEERS SINCE 1889

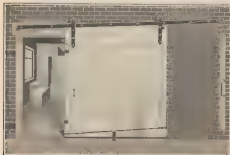
## "WATERLOO" FIRE UNDERWRITERS' FIRE DOORS

Constructed to comply with the Fire Underwriters' specifications and used for all purposes where a fire cut-off is required.

### Construction

"Waterloo" Fire Doors are constructed of three or four thicknesses of approved timber, tongued and grooved, double dressed and seasoned to natural moisture content. The layers of wood are put together at right angles and nailed securely at each crossing with two nails well punched in and clinched. This wood core is then covered with 26-gauge terne or tin plates lap jointed and held to the wood with drive screws five to the length and three to the width.

The sheets covering the ends of the doors are flanged at least two inches on each face. All hardware is of malleable or wrought iron to resist the effects of fire.



## "WATERLOO" DOORS IN ANGLE FRAME

These standard stock doors give a daylight opening of 6 ft. 3 in. x 2 ft. 3 in. They are built on the Fire Door principle, and have a good combination slide and 4-lever lock fitted. They are burglar resisting and, as well, give perfect fire protection. "Waterloo" Strongroom Doors are supplied with a mild steel frame complete, which fits a reveal of 6 ft. 5 in. by 2 ft. 7 1/2 in. The frame is fitted with splayed steel fixing lugs.



(Right) — Auto-matic Hinged Fire Door.

(Left) — Standard Automatic Sliding Fire Door.

### Types

Sliding: (a) Sloping Rail; (b) Horizontal Top.

Hinged: Either left or right. Both types can be made in 2 leaves if needed.

### Fire Underwriters' Requirements

All Fire Doors must be automatic. No opening in a wall should exceed 45 square ft. in area if avoidable, and any opening exceeding 55 ft. in superficial area will be deemed not capable of efficient protection by doors. Coverings exceeding 5 ft. in superficial area in walls of brick or terr.

Doors are not deemed capable of protection by either single or double fire doors, neither shall any fire door be fitted to an opening exceeding 21 ft. in superficial area unless the wall is thicker than that described above. Doors must have a door or top rail on one side of opening unless the wall is thicker than that described above. A side of opening and if the door is not automatic, must be made of iron checker plate or approved fireproof material.

### Fixing

Doors are hung on rag bolts built into walls with cones and are secured by via (as a rule) after the walls have been built.



HEAD OFFICE: PARK WORKS, YOUNG STREET, WATERLOO, SYDNEY, N.S.W. MX 1071

### LIST OF BRANCHES

Victoria: Williamstown Road, Fishermen's Bend, Melbourne. MX 3321

South Austral: 119 Weymouth Street, Adelaide. Central 8467.

Newcastle: 24 Hunter Street, Newcastle. B 273.

North Queensland: Flinders Street, Townsville. 2212.

South Queensland: 132-148 Edward Street, Brisbane. B 5608

West Austral: 48 King Street, Perth. B 6399

Tasmania: 31 Argyle Street, Hobart. Hobart 4557

Darwin, Messrs. Fanning Brothers, Darwin.

New Zealand: Custom House Quay, Wellington. 64-789.

Christchurch: 204 Cashel Street, Christchurch. 34-932.

Auckland: Buckland House, Custom Street, Auckland. 45-465.

BRUNNEN & CATALOGUE

18

4

## 4



BANKOVNÝ KATALOG



# WORMALD BROTHERS PTY. LTD.

## "METABILT" Fire Doors and Frames

## Steel Jamb

18

4

"Metabilt" Fire resisting Doors are of one-hour rating approved by all authorities for use on Stair Enclosures and Lift Wells in buildings rated under the Fire-resisting Construction Agreement. A fire cut-off between buildings calls for a "Waterloo" Tinted Door of four hour rating.

"Metabilt" Doors combine resisting construction with modern finish harmonizing with to-day's requirements.

### TECHNICAL DETAILS

#### Door Construction

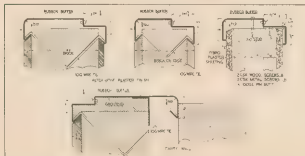
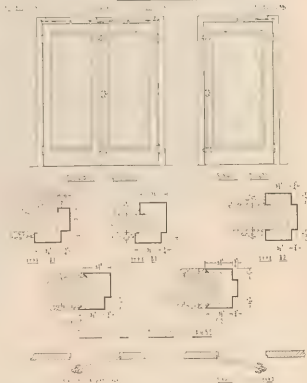
Door cores are constructed of well seasoned wood and asbestos, stiles  $1\frac{1}{2}$  in. thick covered with 18 G. Steel, finished all panels 22 G. Steel, finished all round with metal moulding of standard design. All joints must be welded and finished flush. Steel is of best furniture quality, inside surfaces treated with rust-resisting preparation.

Door Frames.—Frames are constructed of 16 G. Steel, according to conditions combining jamb and architraves complete with necessary building-in lugs and fixing plates. Frames are treated with rust resisting preparation on all interior surfaces.

Hanging.—Hinged doors swing on special hinges, and sliding doors suspended from "Bangor" Ball-bearing Hangers and Track.

Painting.—All work painted one priming coat before delivery.

## HINGED



### STEEL DOOR FRAMES

These frames are especially designed for use with wood doors.

Standard Frames are,—6 ft. 8 in. x 2 ft. 8 in.; 6 ft. 8 in. x 2 ft. 10 in. Door thickness of  $1\frac{1}{2}$  in.

Standard Frames are kept in stock and are supplied with Hinges and Rubber Buffers and Backing to take striking plate. Frames of special design and thickness made to order.

**METAL  
WINDOWS**

SECTION

**19**

SECTION

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CATALOGUES 1 to 9

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19

**MELBOURNE IRON  
and STEEL MILLS  
Pty. Ltd.**

GRANT STREET, SOUTH MELBOURNE

**Brochure Showing Full Details of  
the Construction of**

**STEEL WINDOWS  
OF ALL TYPES**

**using**

**OUR SECTIONS ROLLED IN AUSTRALIA**  
**Mailed on Request**



# AUSTRALIAN METAL PRODUCTS PTY. LTD.

GENERAL OFFICE AND PLANT:

REAR NICHOLSON & SCOTCHMER STREETS  
NORTH FITZROY, VICTORIA

Inter-State Distributors:

ADELAIDE—Messrs. Geo. Wells & Co. Ltd.,

Gilbert Place, Adelaide, South Australia.

BRISBANE—Mr. C. F. Winters, 55 Eagle Street, PERTH—Messrs. Geo. Wells & Co. Ltd., 133 St. George's Terrace, Perth, West. Australia.

HOBART—Darringer & Landell Pty. Ltd., 207-209 Elizabeth St., Hobart.

LAUNCESTON—Darringer & Landell Pty. Ltd., 109 Wellington St., Launceston.

19

2

## DOWELL RESIDENTIAL DOUBLE-HUNG STEEL WINDOWS

Five Types and Twenty-four Sizes - - - Incorporating "UNIQUE" Sash Balance

### ARCHITECTURAL SPECIFICATIONS:

#### 1. GENERAL

All windows so indicated on the plans and elevations, and called for in these specifications shall be "Dowell" Residential Double-hung Steel Windows as manufactured by Australian Metal Products Pty. Ltd., of North Fitzroy, Melbourne.

#### 2. SCOPE OF WORK

The window manufacturer shall include in his work all frames, sashes, spring balances, weatherstripping, meeting rail locks, and sash lifts completely assembled in accordance with the manufacturer's standards. Glazing, finish painting, and caulking are not included under these specifications.

#### 3. MATERIALS

All windows shall be constructed throughout from Zinc annealed Sheet (first quality). Gauges of material shall be as follows:—

Frame, Head, Sill and Jamb members—	18 gauge
Sash, Rails and Stiles	—22 gauge
Bronze Weatherstripping	—20 gauge

#### 4. CONSTRUCTION

Frame, Head, Sill and Jamb members shall be of one piece metal, straight and true to form. Corners shall be scribbled and welded to give maximum strength. Sash members shall also be of one piece metal of tubular section. Stiles to be scribed to top and bottom rails and spot welded. Glazing bars where required of tee section to be welded to sash members, and intersections to be interlocking overlapping joints. Mullions to be as shown in manufacturer's details.

All windows to be prepared for standard blind brackets on inside (Blinds to be provided by others.)

All windows to be prepared to take flyscreens as indicated later.

#### 5. WEATHERSTRIPPING

Weatherstripping shall be of spring bronze applied to jamb sections of frame and interlocking into stile sections of sash. A weathering block shall be attached to the frame at the ends of the meeting rail.

#### 6. HARDWARE

Each sliding sash shall be suspended on "Unique" Spiral Spring Balances as designed as to properly balance the sash when glazed (as indicated later).

Lower sash shall be equipped with sash lifts (two) and meeting rail lock of cadmium plated steel.

Upper sash shall have small pull to underside of bottom rail.

#### 7. RUSTPROOFING

All metal used shall be Zinc annealed Steel Sheet (first quality) as manufactured by John Lyngby Limited. After fabrication frames and sashes shall be dip painted with a first quality anti-corrosive paint before assembly.

#### 8. SCREENS

Screens shall be of one of the following types as indicated on the plans.

(a) Top Hung Full Screens.

(b) Half Sliding Screens.

(c) Half Fixed Screens.

Screens shall have rewireable zinc-annealed steel frames fitted with zincalad flywire 16 mesh. (Bronze flywire at slight extra cost.)

#### 9. ERECTION

Window frames shall be true in all directions and set plumb without distortion. Particular care shall be taken to see that

jamb is not crowded at meeting rail during erection. Joints between frame and wall, and at mullions shall be carefully caulked.

#### 10. GLAZING: (To be done by Glazing Contractor.)

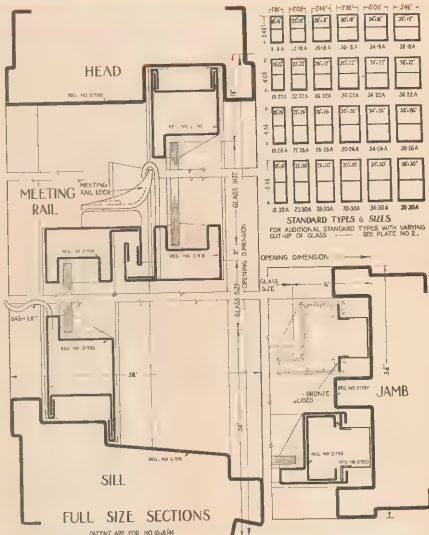
All windows shall be glazed on the outside. Glass shall be held in with spring wire glazing clips. All glass shall be bed and face-putted with steel sash putty especially prepared for outside use. Glass to be 16 oz., 21 oz., or 26 oz., as required.



CAT. LOG 17

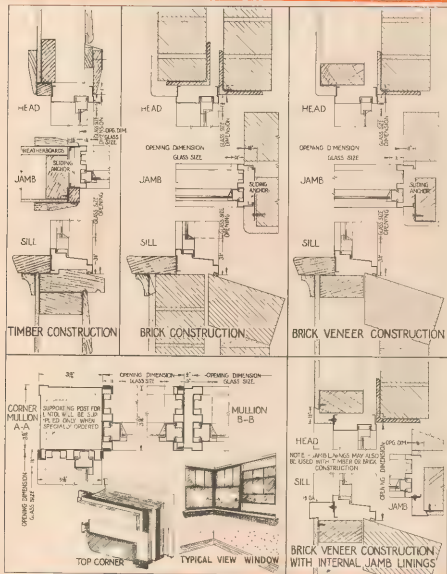
# DOWELL DOUBLE-HUNG STEEL WINDOWS

19  
2

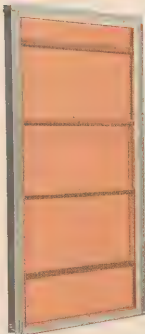


DETAILS OF CONSTRUCTION — STANDARD TYPES AND SIZES

RAMSAY'S



**TYPICAL INSTALLATION AND CONSTRUCTION DETAILS**

**TOP HUNG FULL SCREEN**

Installed on the outside and covering the full window opening, this screen permits freedom of operation of both sashes to any desired position. It is hung at each top corner on a bracket and secured at each jamb with a spring catch, ensuring security and easy removal of the screen from the inside.

**FIXED HALF SCREEN**

This screen covers the lower sash only. It is the most economical of the three types, and permits unobstructive light through the top sash. It is secured with fixing clips on the jambs near the top, and with spring catches near the bottom of the screen. The screen can be readily removed from the inside.

**HALF SLIDING SCREEN**

This screen slides in channel guides attached to the window jambs. It is fitted with a lifting handle and two flat friction springs which hold the screen in place and permits smooth operation. Screens must be ordered with windows so that the guides may be accurately shop fitted.

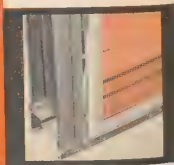
*Screen frames for each of three types are of serviceable zinc anodized steel. Standard flywire is 16-gauge zincrod, but bronze flywire can be supplied at slight extra cost.*

**AUSTRALIAN  
METAL PRODUCTS  
PTY. LTD.**

Rear NICHOLSON & SCOTCHNER  
STREETS, NORTH FITZROY,  
VICTORIA

**FRICTION SPRING and  
SPRING CATCH  
(Cut Away View)**

Two flat friction springs are attached to one side of the screen. The spring side of the screen is first inserted into the guides. The springs are compressed and the opposite side is easily set in its guide. A spring catch on either side locks the screen to the jamb when it is lowered.



J. CONNOLLY LTD.

MOUNTAIN STREET, BROADWAY, SYDNEY—TELEPHONE M2588

*Manufacturing Engineers*

Makers of Fine Metal Door or Window Frames

19

3



NATIONAL LIBRARY

WINDOW FRAMES AND CEILING LIGHTS

*by*

J. CONNOLLY LIMITED

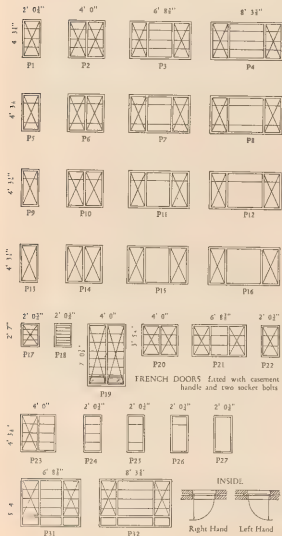
RAYNAT'S CATALOGUE

**J. CONNOLLY LTD.**  
MOUNTAIN STREET, BROADWAY, SYDNEY—TELEPHONE M2588

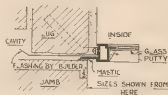
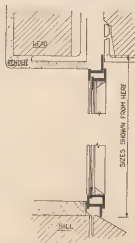


Reading Room in the National Library  
Ceiling Lights Supplied by J. Connolly Limited

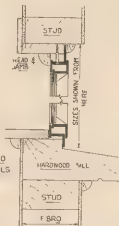
STANDARD  
RESIDENTIAL TYPES & SIZES



DIAGONAL LINES INDICATE OPENING CASEMENTS



BRICKWORK DETAILS



**J. CONNOLLY LTD.**  
MOUNTAIN STREET, BROADWAY, SYDNEY—TELEPHONE M2588

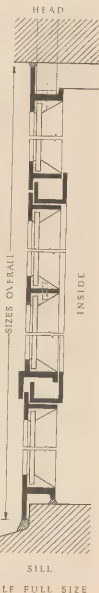




STANDARD FACTORY WINDOWS

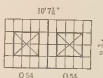
19  
3

2'2 1/4"	2'2 3/4"	3'2 1/4"	3'2 3/4"	4'3 1/4"	4'3 3/4"	5'3 1/4"	5'3 3/4"
F22	O22	F32	O32	F42	O42	F52	O52
F23	O23	F33	O33	F43	O43	F53	O53
F24	O24	F34	O34	F44	O44	F54	O54
F25	O25	F35	O35	F45	O45	F55	O55
F26	O26	F36	O36	F46	O46	F56	O56



Steel frames welded at corners with glazing bars firmly tenoned and fenestra jointed.

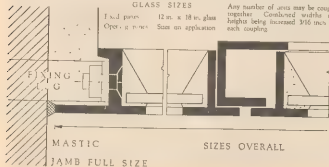
Sashes horizontally pivoted, hung on machined bronze pivots and fitted with bronze spring-catch, cord-roller, eye and cord-clear. Sashes may also be hinged at the bottom to open in, fitted with side-arms and spring-catch or preston opener and cord.



GLASS SIZES

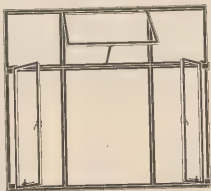
Fixed panes 12 in. x 18 in. glass  
Oper. panes Size on application

Any number of sashes may be coupled together. Coupled widths and heights being increased 3/16 inch for each coupling.



# CAPITOL WINDOWS

CAPITOL WINDOWS are made to special designs and sizes for Office Buildings, Banks, Warehouses, Residences etc.



## SPECIFICATIONS

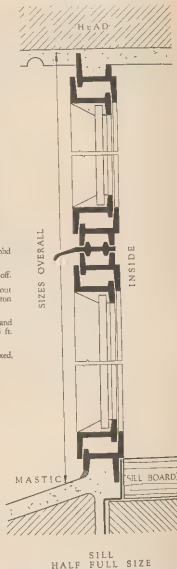
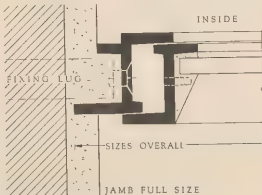
**WINDOWS.** Constructed of 1 1/4 inch Universal sections with rolled double weathering.

**CORNERS.** Machined mitred, electrically welded and neatly cleaned off.

**FANLIGHTS.** Top hung to open out, fitted with bronze push-out stay and locking peg. Fanlights out of reach to be fitted with preston opener cord and cord cleat.

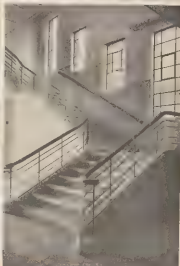
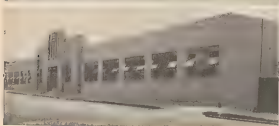
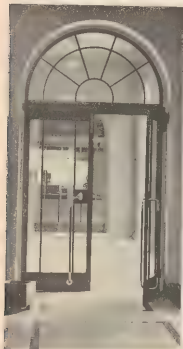
**CASEMENTS.** Side hung to open out, hung on cleaning hinges and fitted with bronze sliding stay and handle. Casements exceeding 5 ft. high to be fitted with double contact handles.

**SIGHT LINES.** All parts of the window whether opening or fixed, shall be of even thickness with the glass in the same plane.



J. CONNOLLY LTD.  
MOUNTAIN STREET, BROADWAY, SYDNEY—TELEPHONE M 2588

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3



**J. CONNOLLY LTD.**  
MOUNTAIN STREET, BROADWAY, SYDNEY—TELEPHONE M2588

**BRONZE DOUBLE-HUNG WINDOW FRAMES**

Buildings equipped with Bronze Work and Aluminium possess certain recognised qualities of dignity, refinement and permanence, that is not to be found in any other material.

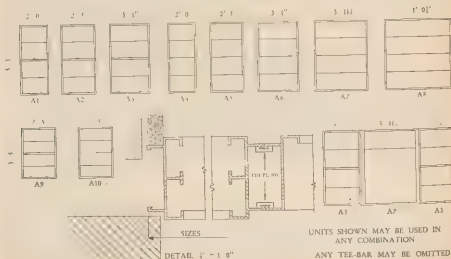
Typical Setting Double Hung Type A3



The design of the window is simple, dignified and architecturally correct. Frame and sash are so designed as to combine strength with maximum daylight opening.

Maintenance costs are negligible.

TYPES & SIZES HELD IN STOCK FOR IMMEDIATE DELIVERY



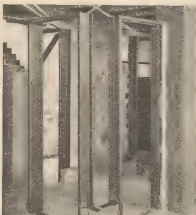
Special sizes made to order

## STANDARD PRESSED METAL DOOR JAMBS

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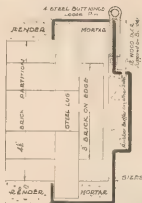
PRESSED METAL DOOR JAMBS AFTER FIXING.



DOOR JAMB SET UP READY FOR BRICKLAYER.

Note the neat and modern appearance of pressed steel door jambs. After fixing they will not warp or become distorted, they are fire-proof, rot-proof, and vermin-proof.

Steel frames which are built in as the building progresses reinforce the wall, and are an added source of strength.



SECTION



DIMENSIONS

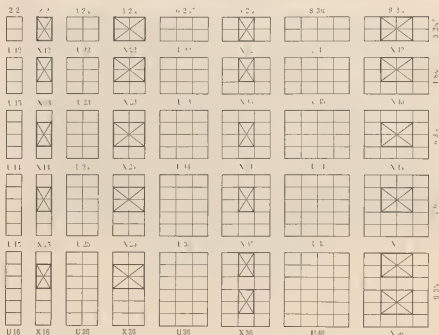
**FIXING:** The steel frame being set plumb in position, the bricklayer should build the wall against or inside the jamb. The adjustable anchors are set in the joints as the work proceeds and the hollow space flushed up with cement at each course, making a solid job.

Pressed metal door jambs are made from the best quality heavy gauge mild steel sheet, accurately pressed to shape, mitred and welded. One pair of 4-inch steel loose pin hinges are provided with each frame. Rubber buffers are provided as a cushion and to take up any play

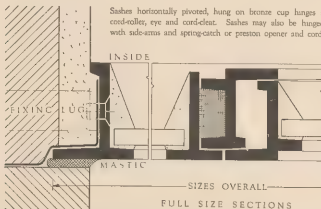
between latch and striking plate. Three movable lugs are provided on each side of frame for building in between brick courses. Standard finish is one priming coat of paint.

*Special Shapes and Sizes Made to Order*

## STANDARD UTILITY WINDOWS



Utility windows are especially suitable for Warehouse and Industrial buildings, etc.



Sashes horizontally pivoted, hung on bronze cup luges and fitted with bronze spring-catch, cord-roller, eye and cord-cleat. Sashes may also be hung at the bottom to open in, fitted with side-arms and spring-catch or Preston opener and cord.

SIZES SHOWN OVERALL  
FRAMES

### GLASS SIZES

Fixed panes. 24 in. x 18 in. glass  
Opening panes. Sizes on application

### FIRE-UNDERWRITER TYPE

Utility windows not exceeding  
56 square feet, when fitted with  
steel glazing beads, horizontally  
pivoted sashes and fusible links,  
comply with the Fire Underwriters  
requirements.

FULL SIZE SECTIONS



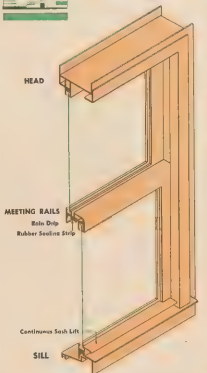
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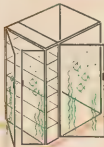
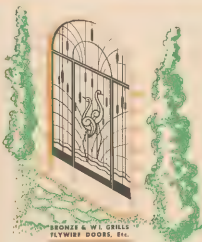
# THE BRONZE WINDOW FRAME COY. PTY. LTD.

HEAD OFFICE 77 BRIDGE ROAD, RICHMOND  
FACTORY: KING STREET, OAKLEIGH

JA5239  
UM2089



HEAVY DUTY, BRONZE, DOUBLE HUNG WINDOW FRAMES SPECIALLY MADE



CHROMIUM PLATED OR ENAMELLED  
SHOWER CABINETS, SCREENS, Etc.

## MANUFACTURERS OF

BRONZE and ALUMINIUM DOUBLE HUNG CASEMENT and CIVIC TYPE WINDOW FRAMES  
STEEL and BRONZE GLAZING BARS FOR GLASS HOUSES, SAWTOOTH ROOFS, Etc  
CHROMIUM PLATED SHOWER CABINETS, SCREENS and BATHROOM FITTINGS  
SPECIAL BRONZE WORK TO DETAIL  
STEEL WINDOW FRAMES OF ALL DESCRIPTIONS  
ORNAMENTAL IRONWORK and ALL CLASSES OF FABRICATED STEELWORK  
STEEL GARAGE DOORS and ROLLER SHUTTERS

BRONZE WINDOW FRAME CO. PTY. LTD.

FACTORY, KING STREET, OAKLEIGH

UM2089

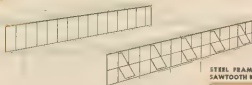


# THE BRONZE WINDOW FRAME CO. PTY. LTD.

REGD. OFFICE 77 BRIDGE ROAD, RICHMOND JA5339

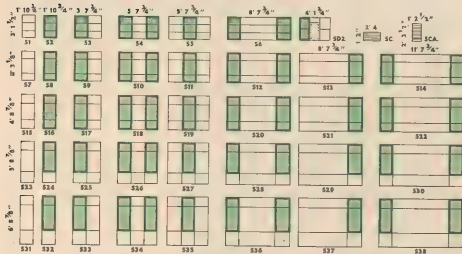
FACTORY KING STREET OAKLEIGH UM2089

STEEL GLAZING BARS  
TO SAWTOOTH ROOFS

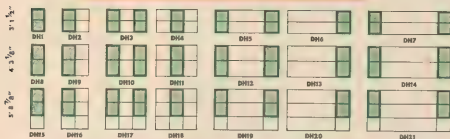


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4

STEEL FRAMED GEAR OPERATED  
SAWTOOTH ROOF LIGHT WINDOWS



STANDARD STEEL RESIDENTIAL WINDOW FRAMES CONSTRUCTED OF  
SOLID ROLLED SECTIONS WITH SIDE HUNG CASEMENT WINDOWS



STANDARD STEEL RESIDENTIAL WINDOW FRAMES WITH BRONZE  
SECTION DOUBLE HUNG SASHES

# Wunderlich Limited

Manufacturers of

## STEEL DOUBLE HUNG WINDOWS

Address: BAPTIST STREET, REDFERN, SYDNEY

Branches in All States

### SPECIFICATION.

Standard Sizes: As shown on detail below

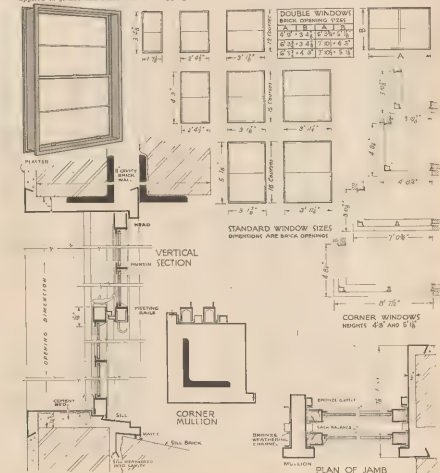
Material: 18 gauge first quality cold rolled steel sheets.

Construction: Head sill and jambs of frame, sashes and tea section glazing bars, pressed, mitred, fitted and electric arc welded. All joints ground flush after welding.

Weather Stripping: 26 gauge bronze weather stripping applied to jambs and sashes with self-tapping screws.

Hardware: Each sliding sash suspended on "Unique" spiral spring balances; final adjustment of balances to be made by builder after installation and glazing. Lower sash fitted with two sash lifts and one meeting rail catch, top sash with one finger pull to underside of meeting rail.

Finish: Sashes and frames degreased, bonderised and finished with one dipped coat of first quality anti-corrosive paint before assembly.



# C. DOWELL & SONS PTY. LTD.

General Office and Plant.  
REAR NICHOLSON AND SCOTCHMER STREETS, FITZROY, VICTORIA.

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## Distributors:

BRISBANE—C. F. Willers, 36 Eagle St., Brisbane

ADELAIDE—Messrs. Geo. Wills & Co. Ltd., Gilbert Place, Adelaide, South Australia.

PERTH—Messrs. Geo. Wills & Co. Ltd., 153 St. George's Terrace, Perth, West Australia.

HOBART—Barrenger & Lansell Pty. Ltd., 207-209 Elizabeth St., Hobart.

LAUNCESTON—Barrenger & Lansell Pty. Ltd., 102 Wellington Street, Launceston.



Typical Installation of Dowell Civic Type Windows, Heidelberg Town Hall, Victoria.  
Architects: Peck & Romer and A. C. L. & H. Bartlett, in conjunction.

## PRODUCTS:

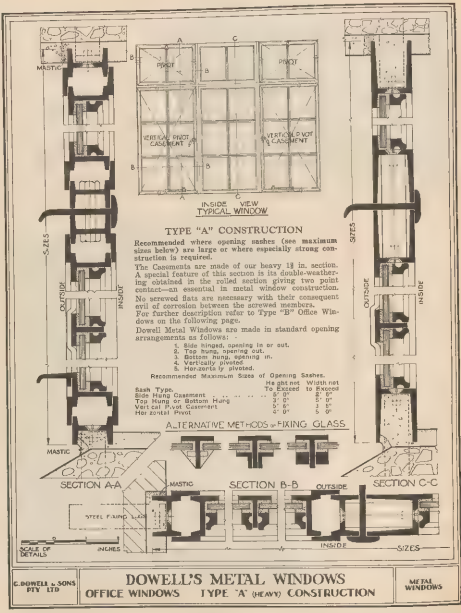
METAL WINDOWS: Dowell Civic and Office Windows, types "A" and "B"; Dowell Standard Warehouse and Industrial Windows, type "W"; Dowell Standard Residential Casement Windows, type "D."

## EQUIPMENT AND FACILITIES:

Our equipment consists of a completely-equipped establishment devoted to production of the above products. Facilities include designing, drafting, engineering, and estimating departments, and a fully-equipped machine shop and finishing department. This organisation is thus able to offer to the architect a complete service covering the production of metal products.



Architects: A. & R. Henderson & Associates





The Dowell Standard Windows as set out below are for use in Warehouses, Factories, and all Industrial Type Buildings—the sizes being based on the standard glass panel of 18 in. x 24 in.

Two or more of these units may be coupled together by means of standard mullions and transoms.

When frames are to comply with the Fire Underwriters' Regulations, they should be fitted with metal glazing beads—for further details see Notes below.

**Frames and Sashes:** Sashes are made of 1½ in. deep double-weathered sections screwed into frames as a unit; frame sections at jams, head and sill are 1½ in. deep. All corners are accurately machined, electrically welded, and cleaned perfectly smooth.

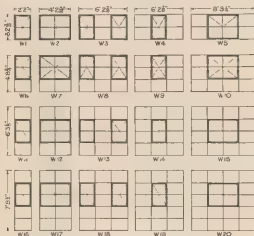
Glazing bars are 18 in. x ½ in. x ½ in. and 1 in. x ½ in. x ½ in. two sections, tenoned and riveted to outer framing, and jointed at intersections with interlocking, overlapping joints. Glazing may be puttied or metal beaded (for Fire Underwriters' requirements).

**Glazing Sizes:** With the exception of smaller sizes in the opening sashes, glass sizes have been standardized to suit 18 in. x 24 in.

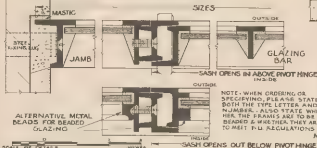
**Hinges:** Sashes are horizontally pivot hung with brass cup hinges.

**Fittings:** Bronze spring catch fastener with cord and cleat is the method of opening sashes. Sashes in windows to meet the Fire Underwriters' Regulations are fitted with fusible links.

**Finish:** All work is given one primary coat of rust-resisting paint before delivery.



ALL OPENING SASHES (INDICATED BY CROSSED DIAGONALS) ARE TO BE HORIZONTAL PIVOT HUNG.  
NOTE—86 SQ. FT. IS THE LIMIT AREA OF ANY FRAME TO COMPLY WITH FIRE UNDERWRITERS REGULATIONS

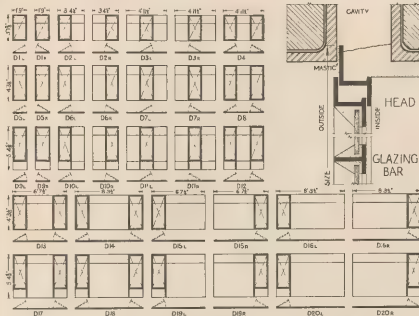


NOTE: WHEN ORDERING, OR SPECIFYING, PLEASE STATE BOTH THE TYPE LETTER AND NUMBER. ALSO STATE WHETHER THE FRAMES ARE TO BE BEADED & WHETHER THEY ARE TO MEET F.U. REGULATIONS

C. DOWELL & SONS  
PTY LTD

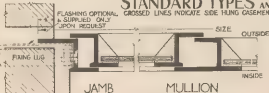
**STANDARD WINDOWS**  
DOWELL WAREHOUSE & INDUSTRIAL TYPE  
STANDARD GLASS PANELS 18 x 24"

**METAL  
WINDOWS**



## STANDARD TYPES AND SIZES

CROSSED LINES INDICATE SIDE HINGE CASEMENTS OPENING OUT



**Frames and Sashes:** The opening sashes are not large and cumbersome, but are large enough to give all the desired ventilation required. Broken up into small panels of glass with light glazing bars, they form a very rigid sash. The section of frame and sash used is 1 in. deep x 3 in. web, with glazing bars of 1 in. x 3/4 in. x 3/4 in. tees. All corners of frames and sashes are welded, and glazing bars are tongued and riveted to outer framing. Intersections of glazing bars are formed by the method of overlapping interlocking joints.

**Fittings.** Sashes are hung on surface hinges with steel pins turning in gunmetal bearings. When required, projecting hinges can be supplied for easy cleaning from inside. Hinges and brackets to receive fittings are welded to the sash and the frame. Casement stays and fasteners are of gunmetal.

**Finish:** All work receives one coat of rust-resisting paint before delivery.

C. DOWELL & SONS  
PTY LTDSTANDARD WINDOWS  
DOWELL STANDARD RESIDENTIAL CASEMENTSMETAL  
WINDOWS

## "DOWELL" SCREENED RESIDENTIAL WINDOW

"Dowell" Standard Residential Casement Window.

Spring Clips secure screen and sash tight retention.

Bronze finish geared underscreen Operator Opening and closing Casement without removing Screen.

Worms and Gear totally enclosed in Housing secured to sill member of Frame—does not interfere with Blinds or Curtains.

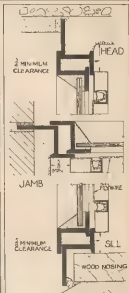
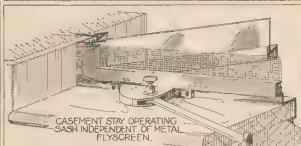


Light-weight pressed metal fly-screen Frame.

Tail Fly-screen effecting secured into Frame with tubular metal Spines, which facilitate replacement of Fly-screen.

Bronze finish improved cam locking Handle of Ornamental Design.

Simple corner Bracket for attaching Screen.



C. DOWELL & SONS  
PTY. LTD.

REMOVABLE METAL FLYSCREENS  
APPLIED TO DOWELL RESIDENTIAL CASEMENTS.

METAL WINDOWS



# CRITTALL

19  
7



# WINDOWS

**CRITTALL MANUFACTURING CO.  
(AUST.) PTY. LTD.**

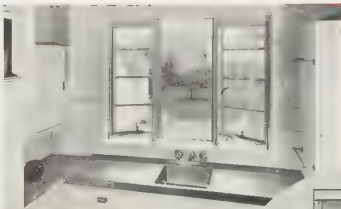
REGD. OFFICE: CHARTER HOUSE, BANK PLACE, MELBOURNE

Telephone: MU9566 (3 lines)

SYDNEY OFFICE: 52-54 CLARENCE STREET  
and at BRISBANE, ADELAIDE and PERTH

FOR LIGHT, AIR AND COMFORT

19  
7



LIGHT AND ADEQUATE  
VENTILATION ARE  
PARTICULARLY  
IMPORTANT IN  
THE KITCHEN.

ALL CRITTALL STANDARD WINDOWS CAN BE  
FITTED WITH STANDARD ROLLING TYPE FLY-  
SCREENS AT SLIGHT ADDITIONAL COST. A  
FULL RANGE OF SIZES IS AVAILABLE FROM  
STOCK



THE POPULAR  
"LANDSCAPE" PANEL  
PROVIDES AN  
UNOBSTRUCTED VIEW,  
WHILST PERMITTING  
MAXIMUM LIGHT TO  
ENTER THE ROOM.  
AS GLAZING BARS  
AND MULLIONS ARE  
ELIMINATED, CLEANING  
IS EASILY EFFECTED.



## BEAUTY AND DEPENDABILITY

19  
7

THE STANDARD UNIT ILLUSTRATED INCORPORATES A WELL DESIGNED SHAVING CABINET OF PRESSED METAL CONSTRUCTION, WHICH IS BUILT INTO THE FRAME.

Overall Frame Size: 3' 5 1/2" x 4' 4 1/2"



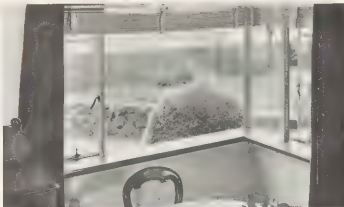
CRITTALL CASEMENTS CAN BE FITTED WITH "EASY CLEANING" HINGES, WHEN SPECIFIED, AT A SLIGHT ADDITIONAL COST.

THESE HINGES ARE NORMALLY SUPPLIED FOR USE WITH WINDOWS ABOVE GROUND FLOOR LEVEL.



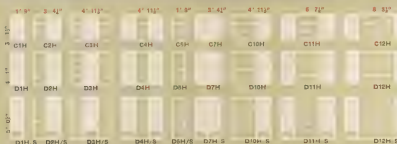
ANGLE WINDOWS CAN BE MADE IN A VARIETY OF SIZES AND DESIGNS, BY COUPLING STANDARD UNITS TO A TUBULAR CORNER POST.

TYPES ARE AVAILABLE TO SUIT BRICK, BRICK VENEER OR TIMBER CONSTRUCTION.



# CRITTALL STANDARD DOMESTIC WINDOWS

19  
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**NOTE**—Shaded portions indicate side hung opening casements. When ordering please indicate which side single casements are to be hinged—i.e.: LH indicates hinged on left hand side looking from inside. RH indicates hinged on right hand side looking from inside.

## JAMB DETAIL



FLASHING  
By Contractor

CAVITY

FLANGE PLATE  
6" x 6" x 1/2"

STANCHION  
FOR CORNER  
WINDOWS  
Scale: 1/2 F.S.

1 1/2" DIAM.  
PIPE POSTS

## SPECIFICATION

**MATERIAL.** Rolled mild steel bars of best quality, all straightened and free from hammer marks.

**CONSTRUCTION.** All corners of frames are mitred and electrically welded. Glazing bars are riveted in and can be omitted if desired.

**HANGING.** Opening lights are hinged at side to open outwards. Side hung casements are made either hand. The hinges are of solid steel, welded or riveted to the frames, and are drilled to fit phosphor bronze pins which have been accurately machined.

**CLEANING HINGES.** Projecting hinges when open give a space of approximately 4 1/2" between fixed and opening frames to facilitate cleansing from the inside. These are supplied, if required, at slight extra cost.

**GLAZING.** The windows are prepared for external pin and putty glazing. Glazing pins and Glass supplied by others.

**FITTINGS.** All fittings are of Gunmetal on brackets or plates riveted or welded to the frames. Side Hung ventilators have handle and non-projecting sliding stay.

**FIXING.** Necessary fixing lugs or screws are supplied with all windows. Special lugs can be obtained for fixing to Brick Veneer work, but these must be specified with order.

**FLYSCREENS.** All frames are drilled to take rolling flyscreens. Refer page 2, specify flyscreens to be supplied.

**FINISH.** All windows are painted one coat red oxide primer prior to despatch.

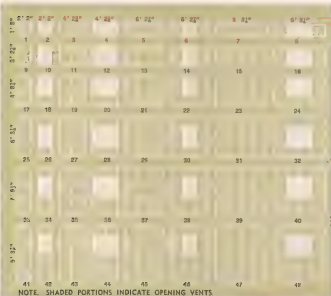
WINDOW BOARD

FLASHING  
By Contractor

# CRITTALL STANDARD DOMESTIC WINDOWS

# CRITTALL STANDARD INDUSTRIAL WINDOWS

19  
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TYPICAL  
FIXING TO  
STRUCTURAL  
STEELWORK



JAMB  
DETAIL

1/2"

OVERALL SIZES



MULLION  
COUPLING

WHEN UNITS ARE COUPLED TOGETHER  
TO OBTAIN LARGER WINDOWS

## SPECIFICATION

**MATERIAL.** Sashes constructed of rolled steel sections 1 1/2" x 1 1/4" with unequal channel outer framing, mitred at corners and electrically welded. Sashes divided into panes with 1 1/2" x 1/2" tee glazing bars riveted in and "Fenestra" jointed at intersections. Opening vents constructed of solid rolled double weathered sections.

**VENTILATION.** Opening vents can be either Horizontal Pivots, bottom hung, or Side Hung. Horizontal Pivots are hung on brass cup pivots and fitted with spring catch, cords, cleats, etc. Bottom hung vents are hung on gunmetal butts, and are fitted with spring catch, adapters, concealed side arms, etc., for cord operation. Side Hung

vents are hung on gunmetal butts and fitted with gunmetal handle and peg or sliding stay. Hopper type vents and permanent vent baffles can also be supplied if required.

**GLAZING.** Frames are prepared for internal pin and putty glazing if frames are to conform with F.U. Regulations, metal glazing beads can be fitted.

**FIXING.** All necessary fixing lugs or screws are supplied.

**FINISH.** Frames are painted one coat red priming paint prior to despatch.

CRITTALL STANDARD INDUSTRIAL WINDOWS

# CRITTALL STANDARD FACTORY WINDOWS

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7

2' 2 1/2"	2' 2 1/2"	3' 2 1/2"	3' 2 1/2"	4' 3 1/2"	4' 3 1/2"	5' 3 1/2"	5' 3 1/2"	
SSP22	SS22	SSP32	SS32	SSP42	SS42	SSP52	SS52	
3' 2 1/2"	4' 2 1/2"	5' 2 1/2"	6' 2 1/2"	7' 2 1/2"	8' 2 1/2"	9' 2 1/2"	10' 2 1/2"	
SSP23	SS23	SSP33	SS33	SSP43	SS43	SSP53	SS53	
6' 2 1/2"	7' 2 1/2"	8' 2 1/2"	9' 2 1/2"	10' 2 1/2"	11' 2 1/2"	12' 2 1/2"	13' 2 1/2"	
SSP24	SS24	SSP34	SS34	SSP44	SS44	SSP54	SS54	
9' 2 1/2"	10' 2 1/2"	11' 2 1/2"	12' 2 1/2"	13' 2 1/2"	14' 2 1/2"	15' 2 1/2"	16' 2 1/2"	
SSP25	SS25	SSP35	SS35	SSP45	SS45	SSP55	SS55	
12' 2 1/2"	13' 2 1/2"	14' 2 1/2"	15' 2 1/2"	16' 2 1/2"	17' 2 1/2"	18' 2 1/2"	19' 2 1/2"	
SSP26	SS26	SSP36	SS36	SSP46	SS46	SSP56	SS56	
HORIZONTALLY CENTRE-HUNG VENTILATORS								

ALL STANDARD TYPES CAN  
BE COUPLED TOGETHER TO  
FORM LARGER FRAMES

NOTE -SHADED PORTIONS  
INDICATE OPENING VENTS.

3' 2 1/2"	4' 3 1/2"	5' 3 1/2"			
SSK33	SSK43	SSK53			
4' 3 1/2"	5' 3 1/2"	6' 3 1/2"			
SSK34	SSK44	SSK54			
5' 3 1/2"	6' 3 1/2"	7' 3 1/2"			
SSK35	SSK45	SSK55			
6' 3 1/2"	7' 3 1/2"	8' 3 1/2"			
SSK36	SSK46	SSK56			
7' 3 1/2"	8' 3 1/2"	9' 3 1/2"			
SSK37	SSK47	SSK57			
8' 3 1/2"	9' 3 1/2"	10' 3 1/2"			
SSK38	SSK48	SSK58			
SIDE HUNG ESCAPE VENTILATORS AT SILL					

NOTE.—SHADED PORTIONS  
INDICATE OPENING VENTS.

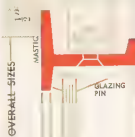
SSK6F Fixed  
SSK6E Centre-Hung  
BULL'S EYES.

BOTTOM-HUNG VENTILATORS

CENTRE HUNG VENTILATORS

## JAMB DETAIL

FIXING  
LUG



## SPECIFICATION

**MATERIAL.** Frames constructed of rolled steel sections 1 1/2" x 1 1/2" with channel outer framing mated at corners and electrically welded. Sashes divided into panes with 1 1/2" x 1 1/2" test glazing bars riveted in and "Fenestra" jointed at intersections. Opening vents constructed with acid rolled double weathered sections.

**VENTILATION.** Opening vents can be either Horizontal P vents, Bottom Hung or Side Hung. Horizontal P vents are fitted with spring catch, cord, cleats, etc. Bottom Hung vents are fitted with spring catch, adapter, cords, etc. Side Hung vents are fitted

with handles and peg stools. Handle type Vents and permanent vent baffles can be supplied if required.

**GLAZING.** Frames are prepared for internal putty and putty glass sq. If windows are to conform with F.L. Regulations, metal glazing beads can be fitted.

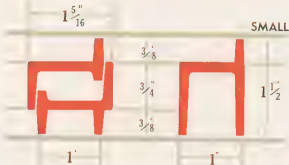
**FIXING.** As necessary fixing lugs or screws are supplied F.A.I.G.H. Frames are painted one coat red priming paint prior to despatch.

# CRITTALL STANDARD FACTORY WINDOWS

# CRITTALL SPECIAL PURPOSE WINDOWS

## SECTIONS

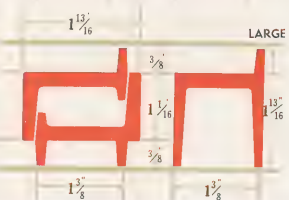
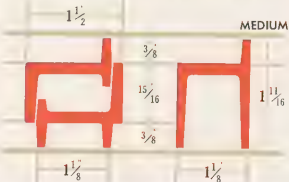
The three ordinary weights of sections for opening windows and fixed lights are shown here actual size. The weight of section to be used is determined by the size of the window. See table below for size limits of various types of opening frames. The glazing rebate of all sections is  $\frac{1}{8}$  in. deep. Windows can be prepared for glazing with pin and putty or with steel glazing beads. The range of bar sections includes profiles suitable for either internal or external glazing. See overleaf for typical special sections illustrating extended flange framing for building-in purposes.



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## LIMITS OR MAXIMUM SIZES OF CRITTALL VENTILATORS

Type of Ventilator	Small Sect.	Medium Sect.	Large Sect.
Side-Hung, open out or in	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"
Vertically Centre-Hung	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"
Horizontally Centre-Hung or Top-Hung	H. 4'8" W. 4'0"	H. 5'0" W. 5'0"	H. 5'0" W. 6'0"
Bottom-Hung, with or without Side Chassis	H. 4'0" W. 4'0"	H. 5'0" W. 5'0"	H. 5'0" W. 6'0"
Folding, open out or in	H. 4'6" W. 4'0"	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"
Folding, with fixed Meeting Rail, open out or in	H. 4'6" W. 4'0"	H. 5'0" W. 5'0"	H. 5'0" W. 5'0"
Folding Doors, open out or in	H. 7'6" W. 5'0"	H. 8'0" W. 6'0"	H. 8'0" W. 6'0"
Single Door, open out or in	H. 7'6" W. 5'0"	H. 8'0" W. 6'0"	H. 8'0" W. 6'0"
Folding, Vertically Centre Hung	H. 4'6" W. 5'0"	H. 5'0" W. 6'0"	H. 5'0" W. 7'0"
Folding, V.C. Hung, with fixed Meeting Rail	H. 4'6" W. 5'0"	H. 5'0" W. 7'0"	H. 5'0" W. 9'0"
Two T-Hung or R-Hung, with or without fixed Meeting Rail	H. 3'6" W. 6'0"	H. 4'0" W. 7'0"	H. 4'6" W. 9'0"
Balance Window	H. 5'6" W. 2'6"	H. 7'0" W. 3'6"	H. 5'0" W. 4'6"
Balance Window with fixed Meeting Rail	H. 5'0" W. 3'6"	H. 7'0" W. 4'6"	H. 5'0" W. 5'6"
Sliding Folding Total width limit, 20'; not more than four leaves to slide in one direction	H. 8'0" W. 3'0"	H. 8'0" W. 3'0"	H. 8'0" W. 3'0"



Prevaling conditions necessitate the limitation of production to the medium range of sections only

# CRITTALL SPECIAL PURPOSE WINDOWS

# CRITTALL SPECIAL PURPOSE WINDOWS

19

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RENDERING

OUTSIDE

FIXING  
LUG

GLAZING  
FIN

TYPICAL JAMB

TRANSOME

OUTSIDE

MULLION

## BRIEF SPECIFICATION

**MATERIAL** All bars are of first grade rolled mild steel

**WEATHERING.** All types of casements are double weathered at all points. All weathering is solid with the framing.

**SIGHT LINES.** The sight lines of both opening and fixed lights are the same, and the glass is in the same plane throughout.

**CONSTRUCTION.** All corners of frames are electrically welded and all glazing bars are riveted in and "Fenestra" jointed at the intersections.

**HANGING.** Hinges are of solid drawn bronze with phosphor bronze pins. In certain applications pressed steel hinges with bronze pins and washers are used. Ring centres are of drawn and pressed bronze.

**FINISH.** All windows are freed from scale and rust and painted one coat priming prior to despatch.

**FITTINGS** are of bronze and are all removable.

**FIXING.** All windows are supplied complete with necessary lugs, screws, etc., for fixing.

**NOTE**—Specifications are subject to alteration without notice.

Further information regarding construction, fittings and methods of fixing can be obtained on application.

## TEE MULLIONS and TRANSOMES

A new method of opening vents of any kind may be coupled together to form composite windows by the use of steel T coupling bars. This method offers much less obstruction to light than either wood or stone mullions and transomes. The coupling is effected by means of countersunk bolts concealed in the section channels. This method facilitates shipping in small units. In cases where the mullions and transomes intersect, both are continuous, the mullion being threaded through the transome. This greatly increases the rigidity of the completed window.

CRITTALL SPECIAL PURPOSE WINDOWS





**K-M STEEL PRODUCTS  
LIMITED**

**K-M DISTRIBUTORS THROUGHOUT AUSTRALASIA**



## K-M STEEL PRODUCTS LIMITED

Executive Offices and Main Plant

RICHMOND, E.1, VICTORIA, AUSTRALIA



### ANNOUNCING NEW STANDARDS

K-M Steel Products Limited has developed a complete new series of standard types and sizes of metal windows which will meet the latest building standards in all states, and can be adapted to all architectural requirements.

Catalogues are now in course of revision and will be distributed at an early date.

REFER OPPOSITE PAGE FOR RANGE OF PRODUCTS

K-M DISTRIBUTORS THROUGHOUT AUSTRALASIA

## K-M STEEL PRODUCTS LIMITED

Executive Offices and Main Plant

RICHMOND, E.1, VICTORIA, AUSTRALIA

19  
8



### K-M BUILDING PRODUCTS

**K-M SECTIONS** Complete suites of steel window sections of highest quality and modern design. Rolled in our mill at Richmond, Victoria.

**K-M RESIDENTIAL METAL WINDOWS AND DOORS** (Type "F") Standard types and sizes for brick, brick veneer and timber residences. Patented Flyscreens. Sheetmetal Surrounds for timber construction.

**K-M INDUSTRIAL WINDOWS** (Type "D") Standard types and sizes. Office Partitions. Rooflights and Operating Gear.

**K-M FRAMES FOR COMMERCIAL AND PUBLIC BUILDINGS** (Type "C") Equal sight and glass lines.

**K-M "GLIDEAWAY"** (Patented) ALL METAL GARAGE DOORS Standard sizes.

**K-M SHEET METAL** Door Jamb, Skirting, Shelving, Lockers.

**K-M STEEL REINFORCING AND ELECTRICALLY WELDED FABRIC.**

**K-M LIGHT STRUCTURAL STEEL WORK.**

K-M DISTRIBUTORS THROUGHOUT AUSTRALASIA

**19****8****K-M DISTRIBUTORS THROUGHOUT AUSTRALASIA**



*The Manufacturing Programme embraces the following products:—*

**Metal Window Frames — Steel or non-ferrous metals**

both Standard and Special Types to suit all requirements and purposes.

**Steel Roof Light Frames —**

for use in saw-tooth roof construction to factories, warehouses and similar buildings.

**Mechanical Operating Gear —**

for manipulation of long or short runs of opening sashes to wall frames or roof lights of industrial works.

**Fabricated Steel Reinforcement —**

for reinforced concrete floors, walls, beams, and other type of structures.

**Electrically Welded Steelwork —**

Light Steel Roof Trusses, Lattice Girders, Shed Buildings and General Structures.

**Guard Bars, Grilles and Wrought Ironwork —**

including ornamental work and ordinary Builders' Ironwork.

*The Products of the Company are executed under exacting conditions in up-to-date and well equipped works.*

*Trained Specialists and Technical Experts ensure the unvarying highest quality of all its products.*

**GAMLIN & METES  
PTY. LTD.**

Engineers and Manufacturers

REGISTERED OFFICE AND WORKS.

**501 RAE STREET, NORTH FITZROY, MELBOURNE, VICTORIA**

TELEPHONES — JW 4222, JW 4219

DISTRIBUTORS IN ALL PRINCIPAL CENTRES.



FULL SIZE  
SECTIONS



METAL  
WINDOWS

The HANDLING and BUILDING-IN of Metal Frames on the job are important matters which should be given due attention by architects and contractors. Frames stacked on the site should be placed in upright position. By careless handling frames may be per-

**INDUSTRIAL**  
**TYPE: Class II**

mentally warped and injured resulting in faulty closing of opening sashes after building in. Under no circumstances should weight be supported by the frames either by scaffolding or form work. They are not constructed to carry any such loads.

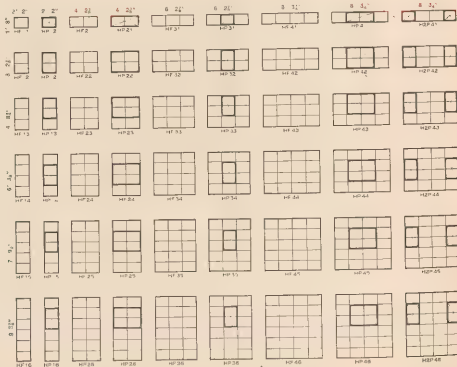
When building-in, we strongly recommend setting the frames against a mastic compound on the outer faces on all four frame sides. Except in unimportant industrial building, it is advisable to provide flashing strips all round frames, and this should be specified when ordering.



## STANDARD HEAVY INDUSTRIAL FRAMES

Opening Sashes are horizontally hung PIVOTS

Frame sizes are based on 24in x 18in glass panes for fixed lights.





## METAL WINDOWS

The Domestic Types of Steel Window Frames are developed particularly to suit Residential

## DOMESTIC TYPE

Buildings, Flats and Dwellings, they are low in first cost, easily fixed, indestructible weather and white and good. Astragal bars morticed, tinned and riveted. All intersections are of interlocking lock bar construction. Frames are delivered complete with four glass fittings, building in dowels and painted one coat of anti-corrosive paint. Glass is not supplied by us.



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FULL SIZE  
SECTIONS

## STANDARD DOMESTIC FRAMES

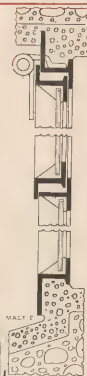
Opening Sashes are side-hung CASIMENTS.



1' 2 1/2"	1' 2 1/2"	1' 2 1/2"	1' 2 1/2"	2' 4"	4' 11 1/2"
D1	D2	D3	D4	D5	D6
1' 2 1/2"	1' 2 1/2"	2' 4"	2' 4"	4' 11 1/2"	4' 11 1/2"
D7	D8	D9	D10	D11	D12
2' 4"	2' 4"	2' 4"	2' 4"	2' 4"	2' 4"
D13	D14	D15	D16	D17	D18
4' 11 1/2"	2' 4"	4' 11 1/2"	6' 2"	8' 2 1/2"	
D19	D20	D21	D22	D23	
5' 2 1/2"					
D24	D25	D26	D27	D28	

By the use of coupling TRANSOMES and MULLIONS the standard frames can be connected into larger COMPOSITE UNITS or corner return frames. Top lights may be fitted with FANLIGHT SASHES (opening out) if specially ordered. See illustration in top right hand corner.

When ordering, give type DESIGNATION MARK. State whether casements are Right or Left Hand. "Hand" means side on which hinges are fixed, seen from INSIDE of building.



SECTION A-A

SIZES

SECTION B-B



SECTION C-C

# GAMLIN & METES PTY. LTD.

Office and Works:

**19** 501 RAE STREET, NORTH FITZROY, N.7  
**9** MELBOURNE - VICTORIA - AUSTRALIA  
 Representatives in all States of the Commonwealth



Rydental Apartments



Manufacturing Plant



Municipal Chambers

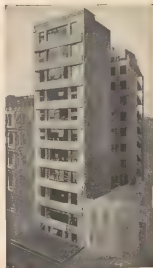


Factory.



**METAL  
WINDOWS**

**FOR ALL TYPES OF BUILDINGS**



Office Building

HARVEY N. CARRIDGE



**SECURITY AND  
BURGLARY  
PROTECTION**

SECTION  
**20**  
SECTION

---

CATALOGUES 1 to 3

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# ELECTRIC SIGNALS LIMITED

Central Station and Offices:

MACDONELL HOUSE

321 PITT STREET, SYDNEY

TELEPHONE: MA 7734

20

I

## Property worth over £40,000,000 Protected

The protective value of the Company's services is demonstrated by the confidence of the nation's largest manufacturers, secondary industries and business concerns in Sydney, of which over 700 are our clients, testifying daily to the truth of the word "Service."

From the moment of installation of the Electric Signals System, Business Proprietors and Executives are relieved of the weight of anxiety and responsibility occasioned by the fear of burglary and illegal entry. The ramifications of the service cover over 550 miles of electrical circuits connected with the Company's own electric station, where special officers are on duty 24 hours of every day in the year, its Night Armed Patrol working in unison with the Police Wireless Division.



Switchboard at the Company's Station

Ring Telephone No. MA9661 for appointment when an Executive will call and give full particulars.

## Twelve Services Available

1. Complete protection against unauthorised entry into business premises.
2. Provision of weekly report showing: (a) the time the premises opened in the morning; (b) the time they closed at night; and (c) the times authorised persons entered and left the premises after normal hours, and the names of these persons.
3. A check on persons entering certain stockrooms during the day and during the night shifts—a service resulting in considerable reduction in losses from theft.
4. Checking caretakers or special patrolmen on their rounds.
5. Provision of some positive security for employees working in isolated premises after normal business hours.
6. Producing acceptable legal evidence in cases where the time factor of the opening of premises is material, and also overtime claims by employees.
7. Switching show-window and other lights on and off.
8. Starting or stopping machines and control of temperature of boilers, etc.
9. Providing, by the means of special apparatus, an inconspicuous method of calling for assistance by persons in small shops or businesses in the event of a hold-up.
10. Providing subsidiary telephone service, available if the ordinary system is temporarily out of order.
11. Providing means of communication in lifts for emergency purposes.
12. Obtaining reductions in insurance premiums, as a result of the increased security afforded by the Company's services.

Naturally, these services are made possible only by means of careful, accurate and extensive organisation.

### Some of the Clients of Electric Signals Ltd.

Commonwealth Government, N.S.W. Government, Netherlands Indies Government, Metropolitan Water, Sewerage and Drainage Board, Maritime Services Board of N.S.W., Austral Bronze Co. Pty. Ltd., Amalgamated Wireless

(Asia) Ltd., Wm. Adams & Co. Ltd., Dalgety & Co. Ltd., De Havilland Aircraft Pty. Ltd., Dunkerley Hat Mfg. Co., Stirling, Henry Ltd., Dunlop Rubber Co. Ltd., Pelt & Textiles of Aust. Ltd., Burns, Philp & Co. Ltd.

RAMSBY & CATALOGUE

FOR YOUR PROTECTION



FROM FIRE AND THEFT

# BULLDOG SAFES AND STRONGROOM DOORS

Australia has proved in many fields of industrial endeavour that products manufactured here are equal to the world's best. This applies with particular emphasis to the manufacture of Steel Safes and Strongroom doors.

BULLDOG SAFE WORKS is an all-Australian organisation devoted exclusively to the manufacture of Safes and Strongroom Doors. Here the most modern methods known are employed to create a product which has been proved over many years to be equalled only by the best.

Particulars of the main lines manufactured are given on the following pages, but we shall be pleased to design any special size, type or construction to suit individual requirements for protection from Fire and Theft.

SAFE MAKERS  
SINCE 1900

## BULLDOG SAFE WORKS

CITY SALES OFFICE & SHOWROOM, 76 CLARENCE ST., SYDNEY, N.S.W.

Telephone BX2621 (Two lines)

WORKS: BUCKLAND ST., SYDNEY; MOUNTAIN ST., SYDNEY; AND PORTLAND N.S.W., AUSTRALIA

AGENTS IN ALL CAPITAL CITIES THROUGHOUT AUSTRALIA

## BULLDOG SAFES AND STRONGROOM DOORS

BULLDOG SAFES AND STRONGROOM DOORS CAN BE FITTED WITH EXPLOSIVE SAFETY LOCKING DEVICE IF DESIRED

ANGLE IRON STANDS MAY BE HAD IF REQUIRED.

BULLDOG SAFES ARE MADE IN STOCK SIZES FROM 24 in. x 18 in. x 18 in. TO 60 in. x 30 in. x 30 in., EITHER STANDARD OR HEAVY BANKERS' QUALITY.

SPECIAL SIZES, DOUBLE DOOR, AND PARTNER-SHIP SAFES, DOUBLE LOCKING, OR COMBINATION LOCKS, ETC., TO ORDER

SEE COMPLETE RANGE OF SIZES ON PAGE 3.



ILLUSTRATED ABOVE

OUTSIDE MEASUREMENT: 38 in. x 24 in. x 24 in.      INSIDE MEASUREMENT: 30 in. x 18 in. x 18 in.

SAFE MAKERS  
SINCE 1900

BULLDOG SAFES AND STRONGROOM DOORS are exported to our Overseas Representatives in New Zealand, Fiji, Africa, India, Rhodesia, Burma, Malaya, Middle East, China, and Pacific Islands.

BULLDOG SAFES AND STRONGROOM DOORS are in use by State Government and Commonwealth Government Departments, Insurance Companies and Financial Institutions, Savings Banks, Wholesale and Retail Jewellers, Firm Merchants, Clubs, Business Houses, Tradespeople, Etc.



See Complete Range of Sizes, Page 3.

**BULLDOG SAFEWORKS, 76 CLARENCE STREET, SYDNEY, N.S.W.**

Telephone BX2621 (Two lines)

AGENTS IN ALL CAPITAL CITIES THROUGHOUT AUSTRALIA

# BULLDOG SAFES AND STRONGROOM DOORS

## SPECIFICATIONS

### STANDARD QUALITY

FIRE, THIEF, AND EXPLOSIVE RESIST NO

#### BOOBY

Heavy Steel Plate, Bent Gold on inside. Electrically Welded, Bent Corners

#### DOOR

1/2 in. Steel Plate, Indiv dual Locking Case, 2 in. Large Capacity; Fireproof Chamber 3 in. Total Thickness, 5/8 in.

#### HINGES AND LUGS

1 1/2 in. Shaped High Grade Steel.

#### LOCKING

Locking Bolts, running right through, plus permanent bolts on opposite side in fixed position

#### LOCKS

Best quality 8-Lever Lockable, shielded with Heavy Hardened Steel Plate. (Keys in duplicate.)

#### EXPLOSIVE SAFETY LOCKING DEVICE

This may be fitted if desired at extra cost. See detailed description below.

#### FIRE CHAMBERS

3 in. Thickness. Packed with Best Steam Generator Compound on

#### FITTINGS

A-1 Solid Brass—Polished

#### DUCCO FINISH

Outside—2-Tone Mottled Crackle Green.

Inside—Plain Light Salmon Brown.



FITTED WITH EXPLOSIVE

SAFETY LOCKING

SECRET COMPARTMENTS

IF DESIRED.

## SPECIFICATIONS EXTRA HEAVY BANKERS' QUALITY

This quality is built especially for Branch Banks, Gem Merchants, and the like, requiring extra security from burglary. It is approximately 3 1/2 in. heavier in all-round construction and weight, with 4 in. Fire Chambers, and is fitted with our EXPLOSIVE SAFETY LOCKING DEVICE. Details will be supplied on request.

## SPECIAL FEATURE BULLDOG EXPLOSIVE SAFETY LOCKING DEVICE

The device is designed to prevent opening of the Safe or Strongroom Door by explosives. The mechanism is attached to the Lock, and acts in conjunction with the 80-tons when the Lock is blown off, thereby ensuring the Sliding Bolts in the Locked position and preventing entry. It can be fitted to any of our Safes or Strongroom Doors. Further details will be supplied on request.

OUTSIDE MEASUREMENT:

60 in. x 30 in. x 30 in.

INSIDE MEASUREMENT:

52 in. x 22 in. x 21 in.

LOCKING EITHER KEY OR COMBINATION, OR BOTH

Illustrated—Closed View

**BULLDOG SAFEWORKS, 76 CLARENCE STREET, SYDNEY, N.S.W.**

Telephone BX2621 (Two lines)

AGENTS IN ALL CAPITAL CITIES THROUGHOUT AUSTRALIA

## SIZES

BULLDOG SAFES ARE STOCKED IN THE UNDER-MENTIONED SIZES.

## STANDARD QUALITY.

### OUTSIDE MEASUREMENT

	Height	Width	Depth
No. 1	24"	18"	18"
No. 2	26"	20"	20"
No. 3	28"	22"	22"
No. 4	30"	24"	24"
No. 5	32"	26"	26"
No. 6	34"	28"	28"
No. 7	36"	30"	30"
No. 8	38"	32"	32"

### INSIDE MEASUREMENT

	Height	Width	Depth
No. 1	18"	12"	12"
No. 2	20"	14"	14"
No. 3	22"	16"	16"
No. 4	24"	18"	18"
No. 5	26"	20"	20"
No. 6	28"	22"	22"
No. 7	30"	24"	24"
No. 8	32"	26"	26"

### PRICES ON REQUEST

INTERNAL FITTINGS: 8 size Nos. 1, 2—1 Drawer. Sizes Nos. 3 and 4—2 Drawers. Sizes Nos. 5, 6, 7, 8—2 Drawers and 1 Shelf, or Special Fittings as Desired.



COMBINATION AND KEY LOCKING

OUTSIDE MEASUREMENT

60 in. x 30 in. x 30 in.

INSIDE MEASUREMENT

52 in. x 22 in. x 21 in.

Illustrated—Open View.

# BULLDOG SAFES AND STRONGROOM DOORS

20

2



## BULLDOG STRONGROOM DOORS

COMMERCIAL TYPE

FIRE, THIEF, AND EXPLOSIVE RESISTING

SIZE OF DOOR: 6 ft. x 2 ft. 6 in.

FRAME: 3 ft. x 3 ft. x 1 in. Angle Iron, Electric Welded, and fitted with four adjustable Building-in Lugs.

DOOR: Plate of solid 2 in. or 1 in. Steel to which is attached a 2 in. Locking Case and 3 in. Fireproof Chamber; total thickness, 5 in.

FRAME OVERALL: 6 ft. 32 in. x 2 ft.

WALL OPENING: 8 ft. 11 in. x 2 ft. 72 in.

Note: The Door may be built in with the walls as the concreting proceeds, or openings can be made for installation after the walls have been completed.

BOLTS: Door is fitted with four Sliding Bolts in front, and one long continuous Bolt at rear, when door is closed, it radiates behind seating of Door.

LOCKS: Best six-lever (all brass) with Safety Catch Locking or with EXPLOSIVE SAFETY LOCKING DEVICE. Keys in Duplicate.

LOCK-CASE: Is made from 2 in. x 2 in. x 1 in. Angle Iron, through which Sliding Bolts operate in front, and on which the long continuous Bolt is electrically welded at rear.

INSTALLATION: A detailed Plan and Specifications is supplied for building-in purpose.

FIRE CHAMBERS: Full 3 in. capacity chambers, lined with best Steam Generator Compound.

Finish: Primed ready for painting any colour.

SPECIAL SIZES IF REQUIRED.

Also made in Heavy Banker's Quality

## WALL SAFES

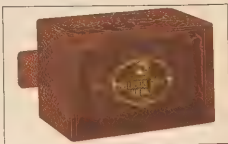
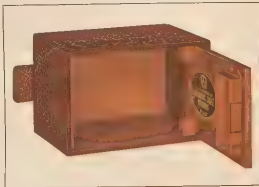
Wall Safes are not designed to take the place of FIRE, THIEF and EXPLOSIVE RESISTING SAFES, as they will not give the same protection. They are, however, an excellent secret SAFE DEPOSIT, or Heavy Steel construction, and prevent petty thieving of Cash, Jewellery, Valuables, etc. They can be concealed, and built flush into the Wall (Brick or Wood) or Shop use, they can also be securely bolted down (from inside) to any fixture, table, desk, etc. for Cashier's use, and locked with a Brass 6-Lever Lock, with duplicate keys.

CASH BOX.—We also make a special Cash Box of Heavy Steel (also fitted with lock and key), which fits snugly into our WALL SAFES, and gives extra security for Cash, etc. CASH WORRIES, Petty Theft, and responsibility for those concerned is eliminated by this method, as all money, cheques, (also locked) during business hours, then transferred overnight (locked) into the main safe or Strongroom. Special sizes can be made to order.

STOCKED IN THREE POPULAR SIZES.  
8 in. x 6 in. x 6 in.; 12 in. x 6 in. x 6 in.; 15 in. x 6 in. x 6 in.

## SPECIFICATIONS:

BODY—Heavy Cold-bent Steel Plate. Two Building-in Lugs DOOR—1 Solid Steel Plate (concealed hinges). LOCKS—Solid Brass 6-Lever (duplicate keys). FINISH—Two-tone Crackle Brown, Matted.



## BULLDOG SAFE WORKS

CITY SALES OFFICE AND SHOWROOM, 76 CLARENCE STREET, SYDNEY, N.S.W.  
Telephone BX 2021 (2 lines)

AGENTS IN ALL CAPITAL CITIES THROUGHOUT AUSTRALIA

WORKS: BUCKLAND ST., SYDNEY; MOUNTAIN ST., SYDNEY; AND PORTLAND, N.W., AUSTRALIA

# M. G. DYKE & SONS PTY. LTD.

542 BRIDGE ROAD, RICHMOND, VICTORIA

Telephone: JA 1799.

AND 425 KENT STREET, SYDNEY

Telephone: MA 1196.

REPRESENTATIVES IN EVERY STATE IN AUSTRALIA. WRITE US FOR NAME AND ADDRESS OF NEAREST REPRESENTATIVE.

## "PIONEER" and "SAMSON" STRONGROOM DOORS

**"Pioneer" Patent Strongroom Door.**—Guaranteed to be both fire resisting and explosive proof. Passed by the Underwriters' Association and Lloyd's as explosive proof, and subject to the lowest insurance rates. Recommended for branch banks, financial institutions, and merchants requiring protection of cash, valuable commercial books and merchandise from fire as well as from burglary.

**"Samson" Commercial Strongroom Door.**—A first class commercial Strongroom Door. It is not



explosive proof, but is definitely fire resisting and is recommended for general commercial purposes—such as tenants' strongrooms in city buildings, etc., where protection against fire and not burglary by explosives is the major consideration.

**Anti - Blowpipe Strongroom Doors.**—Special Strongroom Doors constructed with materials resistant to attack by the oxy-acetylene blowpipe can be supplied. Full particulars on request.

### "Pioneer" No. 1 Quality, Patent Explosive-Proof and Fire-Proof Strongroom Door.

**DOOR.**—Constructed with door plate of alternative thickness of 1 in. or 1 1/2 in. solid plate. Strengthened over lock and safety device by 5 plate of unbreakable and drill-penetrating steel. To the inner side of the door plate is constructed a steel angle iron frame lockcase through which the sliding bolts pass.

**BOLTS.**—The above is secured in its locked position by 4 steel bolts sliding in front and one continuous fixed bolt at the back, which, on closing, passes radially behind the seating of door.

**LOCK.**—The sliding bolts are secured in their forced position by a solid all-brass, 4 lever lock. The locking mechanism is not secured to the fire chamber of door, but is a special plate on the main door plate.

**LOCKCASE.**—Made from 3 in. x 3 in. x 1/2 in. angle iron through which the bolts work in front and into which the fixed bolt is welded at the back. This is riveted to door plate and also welded to door.

**LOCKING DEVICE.**—Acting in conjunction with the lock is a special locking device which comes into action every time the door is locked, which means that although the lock can be blown off with explosives, the bolt-work remains locked.

**FIREPROOF CHAMBER.**—Fireproof chamber fits into the angle iron lock case and is easy to remove without taking any strain from the door. The handle does not go right through the fire chamber, but just through the door.

**FIRE-PROOFING.**—Is of the best known composition. Made from "Kieselguhr", alum and sawdust.

**FRAME.**—Door is hung to 3 in. x 3 in. x 1/2 in. angle iron section frame welded at all corners by electric welding system. Fitted with 4 lugs for building-in.



"Pioneer" Explosive-proof Strongroom Door

### "Samson" Commercial No. 1 Strongroom Door.

**DOOR.**—Door plate of 3 in. solid steel plate. LOCKCASE.—3 in. over all and fitted with 3 steel bolts sliding in front, and one long continuous fixed bolt at the back, which, on closing of door, passes radially behind seating of door.

**LOCK.**—The sliding bolts are secured in their locked position by a 4-lever lock.

**FIRE-PROOF CHAMBER.**—Is charged with best known composition "Kieselguhr", alum and sawdust.

**FRAME.**—Door is hung to 3 in. x 3 in. x 1/2 in. angle iron section frame welded at all corners by electric welding system. Fitted with 4 lugs for building-in.

### "Samson" Commercial No. 2 Strongroom Door.

**DOOR.**—Door plate of 1/2 in. solid steel plate.

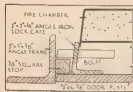
**LOCKCASE.**—3 1/2 in. over all and fitted with 4 steel bolts sliding in front, and one long continuous fixed bolt at the back, which, on closing of door, passes radially behind seating of door.

**LOCK.**—The sliding bolts are secured in their locked position by a 4 lever lock.

**FIRE-PROOF CHAMBER.**—Is charged with best known composition "Kieselguhr", alum and sawdust.

**FRAME.**—Door is hung to 3 in. x 3 in. x 1/2 in. angle iron section frame welded at all corners by electric welding system. Fitted with 4 lugs for building-in.

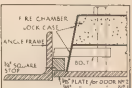
### Jamb Plan of the "Pioneer" Door.



Note the manner in which the fire-proof chamber fits into the angle iron lockcase. If the lock is attacked by explosives, the fire chamber is easily blown off, thus retaining the door on which the locking mechanism is secured by means of a special plate on the back of main door plate from any strain.

The fire chamber forms part of lockcase, and as the locking mechanism is secured to the fire chamber, the whole of the lockcase may be blown off if the lock were attacked by explosives. The "Samson" is not designed as an explosive-proof door, but as a high-grade, fire-resisting, strongroom door.

### Jamb Plan of the "Samson" Door.



## s / Historic Houses Trust of N

ESSAY &amp; CATALOGUE



**WALLBOARD,  
WOODWORK  
and JOINERY**

SECTION

**21**

SECTION

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CATALOGUES 1 to 4

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## RÖMCKE PROPRIETARY LIMITED

CHURCH LANE, MELBOURNE

Telephone: MU6037 (2 lines)

RÖMCKE PROPRIETARY LIMITED CORDIALLY INVITES THE

*Architectural Profession*

to visit their showrooms for up-to-the minute guidance and advice on all problems of production, manufacture and supply of all lines of Plywoods, Doors, Panelling, Rubber Flooring, Veneers and Laminates of all descriptions.

Owing to post-war developments it is impossible to catalogue individual lines but maximum service and information is available at all times on request.

**PLYWOODS:**

All varieties of plywoods in all sizes. Knife-cut Walnut, Maple, Ash and Silky Oak. Rotary cut Pine, Silky Oak, Maple, etc. Waterproof Plywoods for external uses, etc.

**DOORS:**

"Ekmor" Flush Doors (solid and semi-solid) in knife-cut and rotary Veneers (with or without edge strips), mortised for lock. Single Panel Doors, etc., etc.

**VENEERS:**

All Australian and Imported Veneers in plank and butt. Australian Walnut, Maple, Ash, Silky Oak, Black Bean, Blackwood, Sycamore, Mahogany, etc. Lacewood, Silver Ash, Pencil Cedar and Golden Ash.

Imported Weathered Sycamore, English Oak, Birch, Macassar Ebony, Flamy Gaboon, Sapelli, Burma Padouk, Italian Walnut, and other magnificent Veneers.

**PANELLING:**

Queensland Solid-core, Veneered in Beautiful Australian Veneers.  $\frac{1}{2}$  in. thick for both Polish and Paint.

**RUBBER  
FLOORING:**

Installations undertaken for covering Kitchens, Bathrooms, Lounges, Public Buildings, Hotel Bars, Stairs, etc. Quotations on request. (Refer also to page 24/7 under Rubber Flooring).

# RÖMCKE PROPRIETARY LIMITED

CHURCH LANE, MELBOURNE

## VENEERED FLUSH PANELLING

21

Timber has always been the most esteemed covering for interior walls. When properly used, it has more beauty of colouring and greater durability than any other material. The modern demand for simplicity has necessitated the development of a new type of panel, one that can be erected without elaborate framing and expensive battening, and, obviously, a panel of much greater strength than ordinary 3 or 5-ply was required.

Flush Panels 1 1/2" in thick, with solid-sawn, built-up core of kiln-



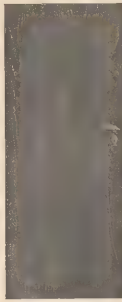
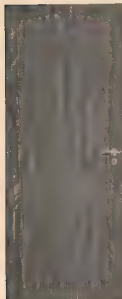
dried selected timber, cross banded and veneered are unequalled. These panels are erected side by side on the wall, giving the effect of one large, unbroken surface of figured timber. All joints are secretly nailed, tongue and grooved. For office partitions double-sided panels are more economical than ordinary framed-up partitions. The panels are so accurately made that joints are practically invisible. Solid-core panels are ideally suitable for cupboard doors, and as such are also available with veneer for paint.

## Doors of Quality

Solid-core Flush Door

Semi-solid Flush Door

Single Panel Door



### SOLID CORE FLUSH DOOR

"Ekmo"  
Solid-core flush doors are available in Queensland Walnut (as illustrated), Maple, Silky Oak, or Ash. They may also be supplied in glove, but with Horizontal Grains and edge cover strips or with special veneer for paint.

### SEMI-SOLID FLUSH DOOR

"Ekmo"  
Semi-solid flush doors are available in Rose Mahogany (as illustrated), Queensland Walnut or Maple, Rotary Cut Walnut, Ash, etc. or with Hoop Pine Plywood suitable for paint.

### SINGLE PANEL DOOR

"Ekmo"  
Single panel doors are available with kiln dried Hardwood stiles and rails and panels of Rose Mahogany, 7-ply Oak, Walnut, Maple, or Silver Ash (as illustrated). They may also be supplied as above, but with Hoop Pine stiles and rails and panels of Hoop Pine Rose Mahogany, Walnut or Maple.



(For full details see our catalogue)

All doors can be made to any size and are also available with top section beaded to take a glass panel.



# GUNNERSON NOSWORTHY PTY. LTD.

27 YARRA BANK ROAD, SOUTH MELBOURNE, S.C.A.

Phone: MX 4821 (5 lines)



21  
la

## SEMI SOLID FLUSH DOORS

Light in Weight, Strong, Rigid

### CONSTRUCTION:

Core: Stiles, top and bottom rail and 14 intermediate diagonal reinforcements all of kiln dried reconditioned Mountain Ash. (See diagram.)

Plywood Faces, surfaced in any veneer or combination of veneers.

Edges: Strips of solid Mountain Ash applied to any or all edges if desired, we recommend such treatment on back edge only, leaving the other three edges for "fitting" on the job.



## VARIETY OF FINISHES

Queensland Walnut.  
New Gunnes Walnut.  
Queensland Maple.  
Queensland Silky Oak.  
Queensland Copper Oak.  
Queensland Black Bean.  
Queensland Silver Ash.  
Queensland Redwood.  
Tully Oak.  
Crowfoot Elm.  
Figured Mountain Ash.  
Figured Tasmanian Oak.  
Figured Golden Walnut.  
Australian Blackwood.  
Calarta.  
Cocanwood.  
Pine for Painting.  
Large Variety of Inlaid Panels.

Standard Size: 6ft. 8in. x 2ft. 8in. x 1 1/2in. (Nominal)

Other sizes manufactured to detail.

Glass openings and rebating as required.

SEMI-SOLID DOOR  
FIGURED AUSTRALIAN OAK  
WITH WALNUT INLAY



SEMI SOLID DOOR  
N AUSTRALIAN BLACKWOOD



SINGLE PANEL DOOR  
WALNUT PANEL



Solid Core Doors  
by  
GUNNERSEN



COPPER OAK DOORS BY "GUNNERSEN"  
NEW TOWN HALL, BRUNSWICK, VIC.

Available  
in  
any size  
thickness  
or finish

## Plywoods and Panels

500 lines in thicknesses from  $\frac{1}{8}$  in. to  $13/16$  in. in sizes up to 8 ft. x 4 ft.

**Inlaid Wall Panels** We carry a large variety in the finest Australian and Imported Veneers and particularly invite your inspection of these.

**Laminated Core** (any thickness) **Solid Core** ( $13/16$  in. thickness).

**Bending Plywoods** stocked in Maple, Walnut and Silver Ash for curved formations.

**Veneers** —All types of plank and butt veneers stocked.

**SPARTAN** Paints, Enamel Lacquers, Varnishes, etc.—A Types of Surface Coatings.

**HARDWARE** Locks, Handles and Fittings.

**GLUE**—Lauritzen Glue (a glue for every purpose).

**BONDWOOD (WATERPROOF) PLYWOODS** for Boats, Bridges, Caravans, and all exterior work, etc., carried in sizes up to 7 ft. x 4 ft., thickness from  $3/16$  in. upwards.

VICTORIAN DISTRIBUTORS

for

**MASONITE**

(The Wonder Board of 1,000 Uses)

# VICTOR

'FOR DEPENDABILITY'

21  
2

## GYPSUM WALLBOARD



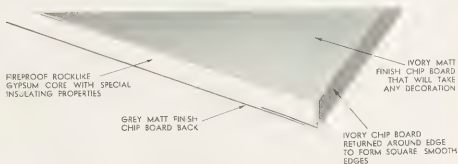
• PERMANENT • FIREPROOF • ECONOMIC •



# GYPSUM WALLBOARD

PERMANENT FIREPROOF ECONOMIC PANELS

AUSTRALIAN PLASTER INDUSTRIES' NEW PRODUCT, VICTOR GYPSUM WALLBOARD, PRODUCED AT THEIR OAKLEIGH MILL, OFFERS UNIQUE ADVANTAGES TO THE BUILDING INDUSTRY ITS LIGHTWEIGHT, FIRE-RESISTING AND STREAMLINED FINISH MAKE IT THE ONLY CHOICE WHERE QUICK, EASILY DECORATED INTERIOR WALLS AND CEILINGS ARE REQUIRED. FULL DETAILS OF THE VARIOUS BOARDS AVAILABLE AND HOW THEY MAY BE APPLIED ARE SET OUT ON THE FOLLOWING PAGES.



ALL TYPES OF BOARD AVAILABLE  
IN LARGE EASILY FIXED PANELS

Gypsum Wallboard has been responsible for the development of a relatively new type of wall construction in America where it has rapidly gained in favour since its introduction 25 years ago. It is now recognised as the most practical material for use with wood-framed construction. Its unique qualities which have proved successful in America will impress Australian Architects and Builders, who always demand the best material for carrying out their work.

Victor Gypsum Wallboard panels are strong, rigid boards that will not warp, shrink or expand; it has a stiffening effect when applied as a lining

material on timber framing. Clean to handle and easy to cut, it is the ideal material for pre-fabricated structures and all classes of general building construction and remodelling work where quickly erected dry wall partitions are called for.

Streamlined walls with invisible joints are easily formed by using recessed edge board and Victor Reinforcing Perforape. Wood cover moulds can be applied with ease where panelled effects or a cheaper finish is required.

The fire-resistant gypsum core is aerated to increase the insulation factor of the board.

AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

RANGLY & CATHCOTE



# GYPSUM WALLBOARD

TWO TYPES OF WALLBOARD AVAILABLE



21

2

## RECESSED EDGE BOARD

Victor Recessed edge Wallboard is a rigid fire-resisting board available in large sturdy panels for use wherever a smooth joint-free wall is required. Pale buff coloured chipboard enclosing a solid fireproof Gypsum core provides an ideal base for the application of all types of decorating material and wallpaper.

Recessed edge Wallboard may be invisibly jointed simply by using Victor Perfortape and Finishing Cement as described on page 3, or finished with moulded cover strips as shown on page 5, to form delightful paneling effects. Invisibly jointed walls up to 12 ft. high and of unlimited length may be constructed with Victor Recessed-edge Wallboard.

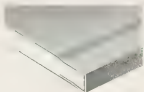
## SQUARE EDGE BOARD

Victor Square-edge Wallboard has all the qualities and characteristics of the recessed-edge board except that it cannot be invisibly jointed in the same manner. This board is ideal for all cases where a quickly erected wall is required; it may be applied vertically or horizontally by simply nailing the large panels to the framing and covering the joints with decorative wood mouldings.

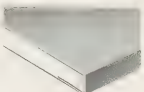
## SIZES AND THICKNESSES AVAILABLE

Thickness and Type.	Width.	Length.
1/2 in. Recessed Edge . . . . .	36 and 48 in.	9, 10, 11, 12 and 16 ft.
1 in. Recessed Edge . . . . .	36 and 48 in.	9, 10, 11, 12 and 16 ft.
1/2 in. Square Edge . . . . .	36 and 48 in.	9, 10, 11, 12 and 16 ft.
1 in. Square Edge . . . . .	36 and 48 in.	9, 10, 11, 12 and 16 ft.

Orders of over 80,000 sq. ft. for one special length will be accepted.



Recessed Edge Boards for Streamlined Walls with Invisibly Jointed.



For Walls where Cover Moulds are required



Smooth, invisibly jointed walls like those in the home illustrated above, designed by Architects Powell, Dido and Thorpe, are possible with Victor Recessed Edge Gypsum Wallboard.

## RECOMMENDATION FOR USING GYPSUM WALLBOARD

The application of each type of Wallboard will be simplified by preparing in advance a fixing plan to scale setting out the arrangement of the panels in order that wall and ceiling framing can be set out accordingly. Such a plan will result in a balanced appearance and practical economy in limiting waste to a minimum. Shorts, offcuts, etc., can be used to line cupboards, etc.

Applying recessed-edge board horizontally (across studs) reduces the length of jointing to be carried out to a minimum; it is advisable in all cases where wallboard is fixed horizontally to provide nogging behind the horizontal joints.

AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

BRUNNEN CATALOGUE

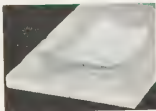
# VICTOR

## REINFORCING PERFOTAPE SYSTEM

A SIMPLE METHOD FOR PROVIDING  
INVISIBLY JOINTED WALLS USING  
RECESSED EDGE GYPSUM WALLBOARD

21

2



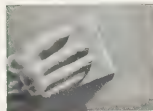
Recessed Edge Wallboard reinforced with Perfortape permits the construction of smooth invisibly jointed walls



Recess at joint of boards is quickly filled with special jointing cement.



Perfortape, a strong kraft fibre with chain lined edges is embedded in the cement.



After drying, cement is sandpapered, assuring smooth surface for any decoration.

Victor Reinforcing Perfortape, comprising strong kraft fibre tape, is produced for use in conjunction with Victor Recessed Edge Gypsum Wallboard and Victor Finishing Cement.

Perfortaped to provide an adequate key and having a surface that bonds well to the finishing cement, Perfortape provides essential reinforcement for joints between wallboard panels.

This system works particularly well with recessed edge board because the recess along the edge provides a perfect channel for tape and cement. The pictures at the left show the easy steps in applying the tape and cement. If normal care is used, the panel intersections can be completely concealed prior to painting, papering or texturing.

### APPLICATION

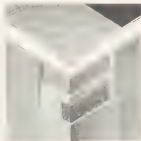
Fill the recess or channel with cement as illustrated, using any 4 in. putty knife. The cement should extend  $\frac{3}{4}$  in. beyond the edge of the putty knife. Apply the perfortaped tape immediately, directly over the cement, and press it into place with the putty knife, which automatically forces some of the cement through the perforations, as shown in step 2.

The cement forced through the perforations should be smoothed over with the putty knife and allowed to dry. Next apply another thin coating of cement so that the tape will be completely hidden.

Feather out edges as smoothly as possible and allow to dry thoroughly. Intermediate nail heads should also be covered with cement and brought flush with the surface of the board. The last operation is sanding the treated joints and the filled nail heads with coarse and then fine sandpaper.

### FINISHING EXTERNAL CORNERS

Methods of finishing external corners are indicated by the two sketches on the right, where joints are fixed vertically and two recessed edges about Victor Perfortape is used in a similar manner to that for a normal joint, the perfortape being scored and bent in the centre to fold around the corner. Where pieces are fixed horizontally or where recessed edges do not align, the ends of the tape may be covered by a wood mould as shown in the lower sketch, a neat clean line may be obtained by cutting the board with a knife to a straight line and then sandpapering the edge smooth and free from rough paper edges.



### VICTOR FINISHING CEMENT

Victor Finishing Cement is mixed with water to a putty consistency and applied with a putty knife between the panel intersections and over exposed nail heads, when thoroughly dry it is sandpapered to a smooth surface. In match the nail board blades being used in conjunction with the Perfortape Cement, Victor Finishing Cement may be used to fill the joints between square edge wallboard. It will not be possible of course to produce the same result with the recessed edge board. Supplied in 40 lb bags and 5 lb pails for small jobs.



AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

BATHURST CATALOGUE

**VICTOR**

# GYP SUM WALLBOARD

SPECIFICATION FOR FIXING, HANDLING, ETC.



21  
2

## SCOPE OF WORK

List all walls, ceilings, and any other surfaces which are to be covered with Victor Gypsum Wallboard.

## FRAMING

It will be necessary to consult the local building by-laws before describing the framing to which the wallboard is to be nailed. It is suggested that where possible studs and joints shall be spaced at 16 in. centres so that 4 ft. wide boards may be used, thereby reducing the number of joints to be made. However, where wallboard is fixed horizontally (across studs) studs may be spaced at up to 24 in. centres where 1/2 in. wallboard is to be used. For 1/2 in. wallboard, stud or joist spacing should not exceed 18 in. centres.

Provision should be made for installing nogging behind all horizontal joints, and at least two rows of nogging should be provided to stiffen wall framing where panels are fixed vertically. All ceilings shall be constructed by applying 1/2 in. wallboard to 2 in. x 1 in. furring strips of approved timber. For first class work all studs shall be gauged to a uniform thickness.

## MATERIAL

**Gypsum Wallboard.** Where wallboard is referred to hereinafter, it shall mean Victor Gypsum Wallboard manufactured by Australian Plaster Industries Pty. Ltd., Melbourne.

Victor Gypsum Wallboard shall be (1/2 in.) (3/4 in.) thick with (Recessed Edge) (Square Edge) (see page three for full description of sizes, thickness and edges). (NOTE: If joints are to be covered with Perfo-Tape System, specify Victor Recessed Edge Board)

All wallboards shall be fixed with galvanised nails 1 1/2 in. x 14 gauge for 1/2 in. board, and 1 1/2 in. x 14 gauge for 3/4 in. board

## HANDLING AND PREPARATION

**Storing on Job.**—All wallboard received on to the job shall be piled flat on the floors with the reverse side up, except first board, which shall be placed face up. It is advisable to have all doors and windows in position before any wallboard is delivered.

## SAWING AND CUTTING

Board shall be scored on the face side to ensure smooth cut on surface of panel. Use sharp knife for scoring, snap board and cut paper on reverse side. Buff cut edges with coarse sandpaper or rasp, providing slight bevel on face side where board is to abut against corner bead as indicated on opposite page; edge shall be finished to a straight line with fine sandpaper.

It is generally not necessary to saw board, but when this is done, saw board face up with a sharp hand saw, supporting board as closely as possible to sawing edge. It is advisable to carry boards around internal corners as full x. Score back of board, snap board without breaking paper on face; this provides a smooth, neat, unbroken corner.

## APPLICATION

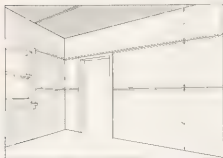
Before applying wallboard, see that all edges and ends are perfect and all ends and cut edges are face bevelled and that faces of boards are unimpaired.

Apply wallboard with back toward studs and nailed directly to studs or battens; provide solid nailing surface behind the four edges of every panel. Panels with closed edges shall be applied moderately close together—never more than 1/2 in. apart. Sawed edges (with gypsum core exposed) or mill cut ends shall always be spaced 1/2 in. apart. Spaces of 1 in. or over between panels must be filled with Victor Finishing Cement and brought flush with the surface before proceeding with the Perfo-Tape system, or otherwise finishing the joint.

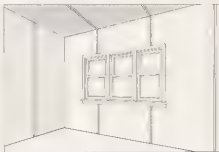
Nails as described previously shall be not less than 1/2 in. from edges and ends of panels spaced at 5 in. to 7 in. centres on joints and 6 in. to 8 in. apart in centres of panels. Nails at joints should not be staggered. Ceiling panels should be erected first, applying panels at right angles to joists.

Wallboard shall be applied to walls either horizontally or vertically. When applying horizontally, use full length panels that will keep the number of end joints to a minimum; full length panels extending from floor to ceiling shall be used when applying wallboard vertically. Panels shall be nailed first at edge adjoining panel last applied, next on centre stud or studs and finally the far edge of the panels and the ends.

Vertical joints on opposite sides of partition shall not come opposite each other on same stud.



HORIZONTAL APPLICATION OF "VICTOR" RECESSED EDGE GYP SUM WALLBOARD (Across Joints and Studding)



VERTICAL APPLICATION OF "VICTOR" RECESSED EDGE GYP SUM WALLBOARD (Along edges parallel to supports,

**AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.**

RAMSAY & CATHOLIC

### TWO SIMPLE METHODS OF JOINTING VICTOR GYPSON WALLBOARD

Joints between recessed edge boards may be covered with a moulded wood cover strip as shown on sketch No 1 below. Where square edge boards are used, a simple joint may be made by spacing the boards approximately  $\frac{1}{4}$  in. or  $\frac{1}{2}$  in. apart and filling the joint with finishing cement, then completing joint with a metal jointing tool. Panelled effects with such joints are easily obtained by planning the location of the panels in advance.

JOINTING RECESSED EDGE BOARD  
WITH WOOD COVER MOULDS



JOINTING SQUARE EDGE BOARD

### ORNAMENTAL DECORATION

Where it is desired to relieve smooth streamlined joint free walls and ceilings with ornamental cornices or panels, it will be found that precast Fibrous Plaster ornamental cornices and centre panels may be used in conjunction with Victor Recessed Edge Gypsum Wallboard. A wide range of cornices and panels are available for selection and these may be installed and finished in a similar manner to gypsum wallboard to harmonise perfectly with it.

### GYPSON LATHING

Victor Perforated Gypsum Lath is made in a similar way to Victor Gypsum Wallboard, except that it is available in smaller sizes, and the gypsum core is encased in a fibre sheet specially produced to bond tightly with the plaster coating; in addition, the lath is perforated as indicated to provide a strong mechanical key for the plaster when it is forced through the perforation as illustrated.

Victor Perforated Gypsum Lathing is the ideal base where high class plaster finishes are required on framed walls in all types of buildings. Complete information about Victor Gypsum Lathing is available in Section 25.4 of Ramsay's.

### DECORATION OF GYPSON WALLBOARD

One of the major advantages of Gypsum Wallboard is the fact that it takes any type of decoration. Victor Gypsum Wallboard can be papered, painted or given any of several texture finishes. Following are instructions for each of these types of decoration over wallboard.

### COLD WATER PAINT

All types of water paint may be applied directly to the surface of Gypsum Wallboard but, like most other surfaces, the application of a good oil base primer before applying the finishing coats will naturally result in a much better finish.

### TEXTURING

All types of texturing materials can be applied to Gypsum Wallboard. Panels should be jointed with Victor Perforated system. All stopping over nail heads, etc. should be allowed to dry before the entire surface to be textured is coated with a good primer to equalise suction and prevent colour variation where coloured texturing material is used.

### PAINTING

Satisfactory finishes result when oil paint or enamels are applied to Gypsum Wallboard. A priming coat to equalise suction over joint and board surfaces will considerably improve the ultimate result.

### WALLPAPERING

Any wallboard job finished with invisible joints by the Victor Perforated system may be wallpapered; papering should not be attempted unless the joints are formed in this manner.

Where an entire wall is to be papered, cover the whole area with a good quality varnish size, then proceed to paper the wall in the same manner that is adopted for a plaster surface. The use of varnish size is essential as it permits the removal of the wallpaper when the surface is to be redecorated.



Applying Plaster to Victor Perforated Gypsum Lath.

AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

# VICTOR

## RECESSED EDGE T & G PARTITION PANELS

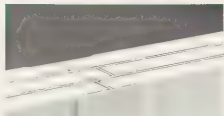
21  
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### SOLID FIREPROOF PARTITION PANELS CUT TIMBER NEEDS 80 TO 90 PER CENT.

Rigid fireproof panels  $1\frac{1}{2}$  in. thick, consisting of three plies of Gypsum Wallboard laminated together to form T. and G. edges are available for use where low cost partitions are required. Limiting the use of timber to an absolute minimum, Victor T. and G. Partition Panels are ideal for use wherever quickly erected sturdy partitions are required in office buildings, homes, factories, flats, hotels, hospitals, etc.

Available in 8 ft. wide panels that may be economically used where planning is based on a 3 ft. module, these panels may be erected rapidly, simply by setting them into place between floor and ceiling runners, securing them in position with quarter rounds or other available mouldings. Channels in floor runners and door frames permit the location of electric service outlets wherever they are desired.

Panels are supplied with recessed edges so that standard Victor Perfoplate system may be used to joint the panels to form smooth walls with invisible joints. All types of decorating materials may be easily applied to the pale buff surface of the panels.



Flat wall with any side joints easily constructed with Recessed Edge Partition Panels.

### OUTLINE SPECIFICATION

#### SCOPE OF WORK

All non load bearing partitions specified or shown in drawings shall be constructed with Victor T. and G. Recessed Edge Partition Panels.

#### MATERIALS

Floor runners and door posts shall be run from selected kiln dried timber to finish 24 in. x 4 in. in section, flush to the outside walls or doors or windows.  
Ceiling runners shall be 11 in. x 1 in.  
Panel retaining mouldings shall be 1 in. x 4 in.

#### FRAMEWORK

Framework shall consist of floor and ceiling runners with panel retaining mouldings as detailed and door posts with panel retaining mouldings on the opposite side wall. Where end panels are framed in, width of end sections with existing walls or partitions, 11 in. x 4 in. runners with 11 in. x 1 in. scribe mouldings shall be used to cover intersections.

#### PLACEMENT OF PANELS

After floor, ceiling and runners have been installed, the Partition Panels shall be set into place against the panel retaining mouldings nailed to floor and ceiling runners. As each run is completed the retaining mouldings on the opposite side shall be nailed. Mouldings shall be nailed and secured with finishing nails not over 12 in. long to avoid any possibility of driving nails into panel channels. When nailing or screwing floor runners, care shall be taken to avoid the channel.

Panels shall be run from door posts or partition intersections to the existing walls so that only end panels need be framed in width.

Head for end panels 14 in. thick, consisting of three plies of Gypsum Wallboard or three plies of T. and G. edge is available for use where low cost partitions are required. Limiting the use of timber to an absolute minimum, Victor T. and G. Partition Panels are ideal for use wherever quickly erected sturdy partitions are required in office buildings, homes, factories, flats, hotels, hospitals, etc.

Available in 8 ft. wide panels that may be economically used where planning is based on a 3 ft. module, these panels may be erected rapidly, simply by setting them into place between floor and ceiling runners, securing them in position with quarter rounds or other available mouldings. Channels in floor runners and door frames permit the location of electric service outlets wherever they are desired.

Panels are supplied with recessed edges so that standard Victor Perfoplate system may be used to joint the panels to form smooth walls with invisible joints. All types of decorating materials may be easily applied to the pale buff surface of the panels. Although these panels are available in a variety of decorative, glazed sections, etc., they are built into them with the heaviest type of glass and solid as well as being built into them from normal heavy masonry construction. The system also provides a fire barrier not available with other lightweight partitions.



AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

REINFORCED CATALOGUE

OTHER A.P.I. PRODUCTS

GYPSUM PRODUCTS

VICTOR GYPSUM WALLBOARD  
VICTOR GYPSUM LATHING  
GYPSUM FLOOR BLOCKS  
HARD WALL PLASTERS  
BASE PLASTERS  
MOULDING PLASTERS  
PLASTER OF PARIS  
DENTAL PLASTERS  
POTTERY PLASTERS

PAINT PRODUCTS

WARATAH KALSOMINE  
WARATAH MILLWHITE

INSULATION

INSULWOOL ZEROBLOK  
INSULWOOL BLANKETS  
INSULWOOL BATTS  
INSULWOOL GRANULATED

SOUND CONTROL

PERFOTILE  
PERFOPLY  
PERPOSTEE  
ACOUSTIC TELEPHONE BOOTHS

THE SIGN OF QUALITY



AUSTRALIAN PLASTER INDUSTRIES

EST. 1899

MELBOURNE • SYDNEY • BRISBANE  
• ADELAIDE • HOBART •



The Masonite Factory at Raymond Terrace, N.S.W. Australian Hardwood is here converted to the 'Wonder Board of 1000 Uses'

## MASONITE Hardboards in modern building construction

Masonite boards are made entirely from Australian hardwoods exploded into fibres and then compressed into sheets. Masonite is genuine wood . . . nothing else. No form of artificial binder is added, the natural binding

agent of the wood, lignin, and the action of steam and pressure on the exploded fibres convert the timber into steel-strong, satin-smooth hardboard.

### PRESWOOD

Masonite Preswood, made only in board form, is commonly used for interior wall and ceiling panelling in new construction and remodelling, cupboards, lockers, partitions, flush doors, display cases and cutouts or panelled displays in stores, in joinery products, and in many manufacturing industries, such as furniture, toys, shipping containers, radio cabinets and many more general uses.

### TEMPERED PRESWOOD

Tempered Preswood is obtained by subjecting Masonite Preswood (untempered) to a special tempering process, in much the same way as steel is tempered.

It is used wherever great strength and resistance to abrasion are required . . . for all exterior applications, table and counter tops, paneling truck bodies, railway cars, trams, caravans, floor in homes, factories and office buildings and in many manufacturing industries.

### TEMPRTILE

Temprtile is Masonite Tempered Preswood into which grooving has been pressed. The grooving is in 4 in. squares, and Temprtile, when carefully finished, gives a beautiful tile effect often mistaken for ceramic tile. It is practical and decorative and may be used wherever tiles are normally employed . . . kitchens, bathrooms, service rooms, hallways, terraces, restaurants, shop fronts, meat markets, banks and public buildings.



MASONITE CORPORATION (AUSTRALIA) LIMITED • PLANT Raymond Terrace N.S.W. • SALES & SERVICE DIVISION 369 Pitt Street, Sydney • 533 Collins Street, Melbourne • 31 Cheape Street, Adelaide • 357 Queen Street, Brisbane

HAMRAY'S CATALOGUE

# Physical properties of available MASONITE Hardboards

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## PRESWOOD

3 Masonite Preswood is made only in board form to a maximum length of 12 feet and a standard width of 4 feet, and in the following thicknesses:  $\frac{1}{8}$  in.,  $\frac{3}{16}$  in.,  $\frac{1}{4}$  in., and  $\frac{5}{16}$  in.

The tensile strength of Masonite Preswood is approximately 3,500 lbs. per sq. inch and the moisture absorption 15' to 20' in 24 hours.

Thickness	No. of Sheets	Measurement	Cubic Ft.	Average Weight (lbs.)	Sq. Ft.	Average Weight per Sq. Ft. in lbs.
$\frac{1}{8}$ "	12	12' 2" x 4' 2" x 2 $\frac{1}{8}$ "	10.0	495	576	.79
$\frac{3}{16}$ "	10	12' 2" x 4' 2" x 2 $\frac{3}{16}$ "	10.0	510	480	.98
$\frac{1}{4}$ "	8	12' 2" x 4' 2" x 2 $\frac{1}{4}$ "	10.0	551	384	1.34
$\frac{5}{16}$ "	6	12' 2" x 4' 2" x 2 $\frac{5}{16}$ "	10.0	535	288	1.73

## TEMPERED PRESWOOD

Masonite Tempered Preswood also is only made in board form to a maximum length of 12 feet, and to a standard width of 4 feet, and in the following thicknesses:  $\frac{1}{8}$  in.,  $\frac{3}{16}$  in.,  $\frac{1}{4}$  in., and  $\frac{5}{16}$  in.

The tensile strength of Masonite Tempered Preswood is approximately 4,500 lbs. per square inch and the moisture absorption about 10% in 24 hours.

Thickness	No. of Sheets	Measurement	Cubic Ft.	Average Weight (lbs.)	Sq. Ft.	Average Weight per Sq. Ft. in lbs.
$\frac{1}{8}$ "	12	12' 2" x 4' 2" x 2 $\frac{1}{8}$ "	10.0	535	576	.86
$\frac{3}{16}$ "	10	12' 2" x 4' 2" x 2 $\frac{3}{16}$ "	10.0	558	480	1.08
$\frac{1}{4}$ "	8	12' 2" x 4' 2" x 2 $\frac{1}{4}$ "	10.0	589	384	1.43
$\frac{5}{16}$ "	6	12' 2" x 4' 2" x 2 $\frac{5}{16}$ "	10.0	553	288	1.79

## TEMPRILE

Masonite Temprile is only made in board form and to a maximum length of 12 feet and to a standard width of 4 feet and only in  $\frac{3}{16}$  inch

thickness. The moisture absorption of Temprile is about 10% in 24 hours.

Thickness	No. of Sheets	Measurement	Cubic Ft.	Average Weight (lbs.)	Sq. Ft.	Average Weight per Sq. Ft. in lbs.
$\frac{3}{16}$ "	10	12' 3" x 4' 3" x 2 $\frac{3}{16}$ "	10.30	573	480	1.12



# Directions for MASONITE Partitioning and Panelling

## PRESWOOD AND TEMPERED PRESWOOD

21

3

### WETTING

Approximately 24 hours before applying the board it should be thoroughly wet on the screen side, using a stiff broom to brush the water into the surface. While wet, the boards should be stacked flat in a pile—screen side to screen side—and allowed to stand until ready for application. To avoid staining, water should not be allowed to touch the face of the board.

### FRAMING

Wood framing not over 12 or 16 inches on centres should be so spaced as to suit interior requirements. Where horizontal joints are necessary, use either 4 in. x 2 in. or 2 in. x 2 in. trimmers cut in between the studding, using straight timber of uniform thickness. Consideration should be given to the design and

general layout, and extra supports added if necessary. Trimmers should be installed back of chair rails and mouldings. When to be applied to masonry walls, the walls should be furred with 2 in. x 1 in. strips on 12 in. or 16 in. centres and shimmed to a true and level plane.

### APPLICATION

Masonite boards should be applied direct to the timber framing, either by nailing or gluing, allowing ample bearing surface for nailing and bringing the boards to moderate contact. Do not spring or force the Masonite sheets into place. All joints to be made at studding.

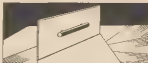
If using the Masonite boards in horizontal position, using a spirit level, determine the lowest spot in the floor, and measure 4 in. up from this point. At this height, using a spirit level, scribe a mark completely around the room. This will be a guide for any

cutting or fitting, and for applying the Masonite boards. Start erecting the boards from an inside corner of the room.

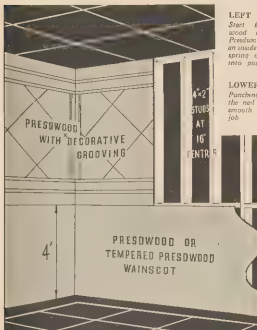
### NAILING

When nailing, use  $\frac{1}{4}$  in. or  $\frac{1}{2}$  in. 16 gauge panel pins, spaced at 4 in. centres at edges of sheets, and in the centre of boards at whatever spacing the studs or joints may be. On solid backing, nails may be 9 ins. apart for  $\frac{1}{2}$  in. board and more for thicker boards. Where a high finish is required, it is suggested that a small hole equal in diameter to the head of the nail be driven  $\frac{1}{8}$  in. into the face of the board before nailing. This will allow the head to be driven under the surface and the hole stopped.

### GLUING



Glue Masonite boards just as you would any other wood board, using a high-grade waterproof adhesive, and being careful to secure solid contact over the entire area. The boards should be accurately cut to fit before applying adhesive and should never be forced or sprung into place. Adhesive should be applied to the back of the boards, using a flat-edged trowel. Spread adhesives to edges of boards and openings, place board in position, pressing and tapping firmly into place. Boards should then be braced to ensure even adhesion to surface of walls or ceilings.



#### LEFT

Start fitting Preswood or Tempered Preswood boards at an inside corner. Never spring or force them into position.

#### LOWER RIGHT

Punches holes for the nail heads using a smooth finish to the job.



## WETTING



Approximately 24 hours before applying the board it should be thoroughly wet on the screen side, using a stiff broom to brush the water into the surface. While wet, the boards should be stacked flat in a pile—screen side to screen side—and allowed to stand until ready for application. To avoid staining, water should not be allowed to touch the face of Presdwood.

## BENDING



The following are two methods which may be used for bending both Presdwood and Tempered Presdwood. In both cases the board should be thoroughly moistened on the screen side, using rags saturated in cold water, and maintain the saturated condition for approximately 25 to 30 hours for Presdwood, and 45 to 55 hours for Tempered board, or until the board contains between 15 and 20 per cent. moisture. The higher moisture content is necessary for the shorter radii. After the boards have been thoroughly moistened, bend over a heated roll or pipe, having a radius slightly less than the finished radius desired. The roll or pipe should be heated to a temperature of 130 degrees Centigrade, or approximately 235 degrees Fahrenheit or higher. The board should be securely clamped to either the roll or pipe, so that by turning the roll or pipe, the board will follow its contour. The bend

must be made very slowly in the case of the thicker boards, so that the moisture in the board will be converted into steam just as the bend is being made. The roll or pipe should not be turned faster than the heat drives the moisture out of the board, so that when the bend is complete, the board will be thoroughly dry at all points around the bend. A slight spring-back should be allowed for, and is compensated by the slightly shorter radius of the roll or pipe used.

For bending large sheets on the end, it is well to fasten the bending equipment to the end of a work table. For bends in the centre of the board, it is preferable to work without a table, as the table is in the way.

The second procedure is the construction of a wood form of slightly less radii than that desired, made from wood slats, nailed tightly together, and planed to a smooth surface. After the board has been moistened, as outlined above, one end is firmly attached, using either nails or clamps on the bottom edge of the form, and the board bent around the form and fastened at the other end, allowing the board to remain on the form until it is thoroughly dry. Placing steam pipes or coils beneath the form and drilling holes through the wood slats will reduce the drying time.

## PLANING

Plane Masonite in the same manner as natural wood. Being a wood product, it will not damage your blades. A smoothing plane is recommended for best results, with the back iron set close up to the cutting edge.

## PUNCHING

Masonite may be perforated or punched into shapes using Metal Stamping Presses and Punching Dies. The Masonite should be placed face down on the masking plate and



the punch brought down on the back or screen side. The punch may be slightly hollow ground with advantage.

## DIE-PRESSING

Masonite can be bent to 4 in. radius by the use of Steam-heated Dies. The Masonite should be soaked in cold water from 24-26 hours, depending on the thickness, and is then immersed for 20 minutes in a boiling water bath.

Immediately it is removed from this bath it should be placed in the dies. These should be at a temperature of 235 deg. to 250 deg. Fahr. The pressure should be applied very



slowly. It is usually found advantageous to ease back the press for a moment or two after each few seconds of pressure. The rate of application of pressure will depend on the size of the die, the thickness of the Masonite and the extent of the "draw."

After the bend is complete the Masonite should be held in the closed die until it has dried out.

## CUTTING

Masonite shapes can be quickly and easily cut or trimmed with a spindle moulding machine.

It is recommended that a carbide cutter be used and that the spindle rotates at as high a speed as possible.

## SAWING

Masonite is an easy material to work. Hand or panel saws between 20 in. and 26 in. with 7 to 12 teeth per inch, are ideal. Circles or cutouts can be done by hand with a compass or fine-tooth coping saw, a jig or fret-saw. Where Masonite is to be cut or stripped in quantity, a circular saw is ideal. Use one about 12 to 14 inches in diameter with hollow ground teeth. Speed about 3,000 r.p.m.

# Directions for MASONITE Partitioning and Panelling

## TEMPRTILE

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3

### WETTING

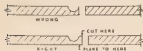
Approximately 24 hours before applying the board it should be thoroughly wet on the screen side, using a stiff broom to brush the water into the surface. While wet, the boards should be stacked flat in a pile, screen side to screen side, and allowed to stand until ready for application.

### PREPARING THE SURFACE

Where walls are uneven, in extremely bad condition, or require insulation, insulating board may be nailed or cemented in place, applying Temptrile over the surface. Before installing Temptrile over plaster walls, see that all high spots are removed. An adhesive should not be used over plaster unless the plaster is firmly attached to its base. Any large holes in the plaster should be pointed up and allowed to dry.

### APPLICATION

First remove base board, plumbing fixtures attached to the wall, brackets or shelves, which might interfere with the installation. Using a spirit level, determine the low spot in the floor, and measure up from this point the desired height of the Temptrile, measuring in multiples of 4 inches. At that height, using a spirit level, scribe a mark completely around the room. This is to be a guide for any cutting or fitting and for applying the Temptrile. Starting at one corner



of the room, to ensure proper fitting at the inside corner, place a sheet of Temptrile approximately one inch from the corner, with the grooving marks running exactly vertical and

horizontal. Then with a pair of dividers, scribe the edge of the tile next to the corner to conform to the irregularities of the corner. Carefully cut along the outside of this line, to ensure satisfactory fitting. On this sheet, and each succeeding sheet of Temptrile, measure and mark any holes or cut-out places. These should be carefully cut so that the plates or covers will hide all edges.

In preparing a butt joint, cut along the outside edge of the extreme right hand grooving. Smooth this edge with a plane, file or sandpaper. This cut should be carefully made, as the full tile marking starts from this point. The second sheet is then cut along the scoring, removing any indication of the score mark, but leaving a full size (4 in. x 4 in.) tile. This edge should also be smoothed, using a plane, file or sandpaper, so that when brought together with the preceding sheet it will form a perfect joint. By using metal mouldings, for edging, joint or corner strips an even neater job may be done.

### GLUEING

There are a number of waterproof adhesives suited to the application of Temptrile over plaster walls or ceilings or over other forms of solid backing.

Adhesive must be spread with a saw-tooth trowel over the entire back of the Temptrile, which should then be placed in position on the wall, using 1½ in. 16-gauge panel pins to hold the board in place. Tap firmly into place with wood block and hammer, or brace if on concrete. After the adhesive has set, the panel pins may be removed or counter-sunk, and the holes patted. SEE THAT THE ENTIRE BOARD IS IN CONTACT WITH THE BACKING. All nailing should be done in the grooving.

### NAILING

Nailing should be done with 1½ in. 16-gauge panel pins, driving them into the cross or inter-sections of the groove lines wherever possible,

otherwise nail in the horizontal lines at a stud. Nails through the body of the board should be spaced, wherever possible, 8 in. apart. Where the sheets come together, to ensure a perfect joint, nail through each horizontal line approximately ½ in. from the edge of the sheet. All joints to be made at studding.

### CORNER APPLICATION

Broken plaster, badly bent corner heads or bull-nose plaster should be removed and a square piece of wood firmly attached to the studding to form the corner. The Temptrile should then be bevelled along the corner edge to produce a mitre joint. At this point, the tile should be nailed at each score line with 1 in. panel pins in addition to applying an adhesive. In fitting around bath tubs, Temptrile should be carefully scribed, cut to follow the exact contour of the edge of the tub. Then make a putty of Keene cement or similar product and water and spread along the edge of the tub and force the Temptrile into this putty. Remove all excess putty before it hardens. Panel pins should always be used along this edge, nailing at every studding.

### SKIRTING CHAIR RAIL OR CAP MOULDING

The mouldings may be made of Masonite Tempered Presdwood or wood, rabbeted on the back to project over the splayed edge of the Temptrile. Base boards should be fitted by scribing lower edge with the floor, keeping upper edge parallel with first groove marking of Temptrile. The corners, base, chair rail or cap moulding may be coped, mitred or buttet to meet the conditions. All mouldings should be fitted but not installed before painting is started.

—MASONITE CATALOGUE

# Directions for MASONITE Flooring

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## INSPECTION OF SUB FLOOR

The sub-floor shall be carefully inspected to see that it is in a solid, smooth condition, free from sharp drops, cupped or loose boards, that all nails are driven home, and that the surface is thoroughly dry.

## APPLICATION

Over the sub-floor apply with butt edges, a 40-pound 170 per cent. super-saturated asphalt felt.

With chalk line establish centre line of room in both directions. From these lines determine any fractional parts of board required to balance width or length of boards at sides and ends of room.

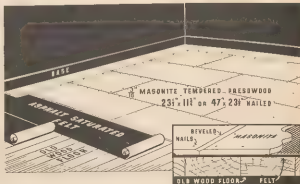
Over the asphalt felt apply  $\frac{1}{2}$  in. Tempered Presdwood Flooring Tiles (sizes 23 $\frac{1}{2}$  in. x 11 $\frac{1}{2}$  in. or 47 in. x 23 $\frac{1}{2}$  in.). Starting in one corner of the room, install either full or part of board as required, along one wall. The second and succeeding rows shall be laid breaking joints to produce an Ashlar pattern. The boards shall be brought to moderate contact. DO NOT FORCE INTO PLACE. Care should be taken to ensure proper fitting of boards around walls, fixtures, etc. It is also possible to use 6 ft. x 4 ft. sheets in the same manner, which may be grooved in any pattern desired.

## WETTING

Approximately 24 hours before applying the board it should be thoroughly wet on the screen side, using a stiff broom to brush the water into the surface. While wet, the boards should be stacked flat in a pile—screen side to screen side—and allowed to stand damp until ready for application. Fix tiles promptly from moist pile and finish all nailing while the tile or sheet is still damp.

## NAILING

All 23 $\frac{1}{2}$  in. x 11 $\frac{1}{2}$  in. boards shall be nailed with twenty-seven 1 in. No. 14 gauge cement coated or processed panel pins spaced as shown on drawing.



All 47 in. x 23 $\frac{1}{2}$  in. boards shall be nailed with sixty-two 1 in. No. 14 gauge panel pins (cement-coated if possible) spaced as shown on drawing.

Nailing shall start in the centre of the board, working toward the edges, after which the edges and ends shall be nailed. Nails shall be spaced 6 in. apart through the body of the board and 3 in. apart around the edges and ends.

After the flooring is laid, all dust and dirt shall be removed from its surface. One heavy coat of an approved sealer shall be flowed over the surface of the finished floor. This coat shall be allowed to stand for approximately 15 to 20 minutes, depending upon the material and drying conditions, after which all excess sealer shall be removed with dry rags. Non-slip waxes are available which may be used in lieu of fillers.

## FINISH

Groove the sheets to any desired pattern, using a grooving tool and a straight edge and template.

The grooving may be done on the bench before laying, or on the floor after laying, as is most convenient. The pattern may be stained, using colours ground in oil and thinned to a "milky" consistency, using a thinner made up of 50 per cent. petrol or turpentine.

Brush or rub on and allow 10 minutes to dry before wiping off the surplus colour with a clean rag. Then allow the floor to dry out overnight; or for about 8 hours before polishing with a non-slip wax.

## MAINTENANCE

Periodically, depending upon wear and use, the floor should be thoroughly cleaned before refinishing. All dust and dirt may be removed from the surface by damp-mopping, and the use of a neutral soap. Care should be taken to prevent the flooding of the floor, and the floor should be dried immediately after mopping. A light coating of an approved sealer may then be applied, using a rag moistened in the sealer as the applicator. This application should be a very thin coat, and after being allowed to stand for approximately 12 to 15 minutes, all surplus or excess sealer should be removed with dry rags. If desired, a non-slip wax may be used instead of a filler.

# Preparing and finishing MASONITE Hardboards

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Being all-wood products, Masonite boards should be finished in similar fashion to natural timber. Masonite boards should almost invariably be finished by staining or painting. Tempered Presdwood should NEVER be used unpainted for exteriors.

The method of manufacture of Masonite boards imparts certain properties to them, allowing modifications to be made in standard painting

practice which both reduce the finishing costs and making possible a very high quality and standard of finish.

The surface of the boards being smooth, the use of a sanding surfacer can be eliminated, as a regular and even finish will be obtained with standard paint finishes when the absorption factor has been counteracted by use of suitable sealers.

## SAND PAPERING

Thoroughly clean and dry off and lightly rub down the entire surface with a fine grade of sandpaper, such as 320 wet and dry paper, to remove any loose fibres and threads. For undercoats, No. 460 sandpaper (wet or dry) is recommended.

If nail holes are to be filled, use putty, plastic wood or caulking compound.

Raw Linseed Oil and a pint of Mineral Turps to the gallon.

**SECOND COAT:** Sealer reduced with  $\frac{1}{2}$  pint of Linseed Oil and 1 pint of Mineral Turps to the gallon.

**THIRD COAT:** One coat Enamel reduced approximately 10 per cent. with Mineral Spirits followed by Enamel direct from the can.

stand for about half an hour—this permits stain and wax to penetrate the surface. If polishing swab is applied too soon, stain and wax will be disturbed, resulting in uneven application. This treatment prevents surfacing with lacquers or varnish, but may be satisfactorily sealed by periodical applications of floor wax. Suitable for table and counter surfaces. It is very important to stress the necessity of continual waxing to maintain a high quality surface.

## PAINTING

Most paint manufacturers produce primers, sealers and prepared paints particularly suitable for application on Masonite. Until such times as products of pre-war range and quality (or better) are again available, we offer the following information, with a view to adapting the standard present-day paints to serve as primer, secondary coat and finishing coat:—

**FIRST COAT:** Reduce paint with Linseed Oil (40 per cent. oil—60 per cent. paint), add sufficient terebine or drier to offset extra oil—allow at least 24 hours to dry.

Quantity of oil to be added will range from 25 per cent. to 50 per cent., depending on the consistency of paint being used.

**SECOND COAT:** Reduce paint slightly with Turps, allow 24 hours to dry.

**THIRD COAT:** Finish coat—apply paint straight from tin. Small quantities of Enamel are now being made available for general interior decoration purposes. The following procedure is recommended:—

**FIRST COAT:** Special Masonite Sealer reduced with  $3 \times \frac{1}{4}$  pints of

## STAINING

**TEMPERED PRESWOOD FLOORING:** The manner in which the surface may be designed and attractively stained has opened up a wide field for Masonite's use in the home, office, store, factory, etc. The wearing qualities are superior to most other materials, and a point of major importance is that the cost is cheaper than the usual run of floor coverings. Oil Stainers are used with very good effect, and should be prepared in the following manner: Reduce to paint consistency by the addition of Petrol or Turpentine. This should be brushed on in the usual manner, allowed to penetrate and partly dry out for a period of approximately 10 minutes (varying according to atmospheric conditions), and then rubbed in with a piece of clean cloth. The surface should be allowed to dry out, surplus stain then being wiped off with another piece of clean cloth. Wax should not be applied until stain is completely dry; it has been proved preferable to wait from 6 to 8 hours, or better still, overnight.

Another method of staining is by the application of a good quality shoe polish. This should be applied evenly by brush or cloth and allowed to

## METAL SPRAYING

Tempered Presdwood may be metal-sprayed on the face side without any pre-treatment such as sand blasting. The sprayed metal makes a good bond with the Masonite, showing no tendency to flake.

Cut-out letters, Masonite mouldings, and also names and motifs (with the aid of a stencil) can be metal-finished. A light buff with a wire brush followed by a coat of vandyke brown lacquer will give an antique effect. If a high polish is required, at least 15/1000ths thickness of metal must be sprayed on. This is then buffed and polished.

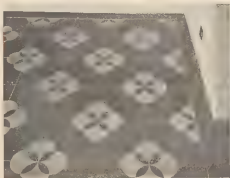
## NATURAL FINISH

With a view to retaining the natural rich chocolate colour of Masonite, first seal the surface effectively by applying any of the numerous clear sealers normally available, or, if preferred, glue size may be used quite successfully.

Two or three coats of varnish should then be applied, resulting in an attractive high gloss finish.

RAMSAY'S CATALOGUE

# MASONITE Hardboards in actual use



*Masonite Tempered Presdwood floor at Hamilton and Baker, Sydney. Masonite was laid over an old wooden tool room floor in extremely bad condition.*



*Portion of the floor at the Criterion Cafe, Melbourne. For dancing and cafe work generally, the hard, smooth surface of Masonite Tempered Presdwood has proved ideal.*



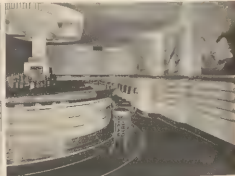
*This bathroom has walls and bath panelling, lined with Temprite. It possesses all the beauty and desirable qualities of ceramic tile, at a considerably lower cost.*



*This office interior has walls, floor and ceiling of Tempered Presdwood and Standard Presdwood. Masonite is particularly suited to office furnishing and interior decoration.*



*Masonite Presdwood used for the offices of a modern Sydney building. In renovating old offices, too, Masonite Presdwood is the ideal material to lend a note of modernity.*



*A cocktail bar showing the artistic bending of Masonite. Strong and again smooth, Masonite Hardboards make fabrication easier and add a touch of atmosphere to modern applications.*

# Special TOOLS for working MASONITE Hardboards

Whilst Masonite is an all-wood product, and is worked with ordinary carpenter's tools, we show you here a few special tools designed specifically for working Masonite Hardboards. Suitable for either the cabinet maker or the amateur woodworker, the tradesman or the handy-man, they

make still easier the fabrication of the "Wonder Board of 1,000 Uses."

You may see and price these tools at all Masonite Distributors, Merchants and Stockists, or the Corporation.

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## CHAMFERING PLANE



Made from a light aluminium alloy, the Chamfering Plane is accurately machined, attractively finished, and is built specially for bevelling Masonite as used in panelling and tile designs for interior decorating and in retail store displays, etc. Masonite hardboard can be ripped to various widths and the edges then bevelled with this tool to give a plank effect as for use in constructing side walls. Short

## GROOVING TOOLS



The blade of the single-ended tool (illustrated above) keyed scientifically into a clear lacquered wooden handle and fitted with a brass chromium plated ferrule, is made from the finest steel and has two keen cutting edges honed ready for use.

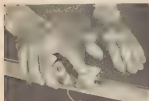
The Double-end Grooving Tool is really four tools in one. Each end of the tool contains two cutting apertures... after finally wearing down

## PAINT STRIPERS

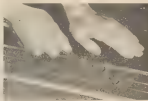


Operating on the same principle as a tennis court marker, the Paint Stripers can be used with any type of Paint, Lacquer, or Enamel, and make lines free from "wobbles" on scored Masonite Boards.

There are two types of Paint Stripers... the standard model for the handyman with only odd jobs to do, and the De Luxe model for the tradesman dealing with quantity production. The De Luxe model is complete



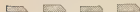
length hardboard with bevelled edges can be used for wallcovering where hard surface material is wanted. The plane will bevel all hardboards to any



one edge the complete cutting aperture may be ground off, and the blade sharpened again on the second hole.



with plunger to assure a constant feed and to clear the guide wheel when the tool is laid aside for short periods.



desired angle from 45 deg. to practically nothing, with just a simple adjustment of the cutting angle of the blade.

## PRE-PUNCHING TOOL



It is desirable to pre-punch Masonite Prendwood and Tempered Prendwood before nailing. Manufactured from high quality steel and carefully heat-treated, the Pre-Punching Tool will give you many years of satisfactory service. For nailing Masonite panelling and Masonite floors, the Pre-Punching Tool is invaluable.

# H. BEECHAM & CO. PTY. LTD.

TIMBER MERCHANTS AND IMPORTERS

Registered Office:

624-660 LONSDALE STREET, MELBOURNE

Telephone: MU6361 (6 lines)

TELEGRAPHIC ADDRESS: "BEECHAM" MELBOURNE

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## THE "RENOVN" WINDOW 600 SERIES

The "Renown" series of windows has been developed as a result of a careful and searching analysis of the requirements of modern times and modern methods, together with a rational approach to the process of manufacture.

### Materials

"Renown" windows are constructed from materials of the highest quality. With the exception of all sills, which are made from specially selected kiln-dried jarrah, the entire range of "Renown" windows are manufactured from hand-picked, kiln-dried mountain ash.

### Precision Manufacture

The inherent durability of timber—its warmth and stability—are used to best advantage. These qualities are reinforced by watertight construction and are evidenced by double-hung sliding sashes, which have so many advantages over casements. Sashes and Unique spiral balances are despatched, fitted and hung in frames, eliminating job fitting.

The proportion of glass to the opening in the wall is indeed remarkable and every care has been taken to

increase the glass proportion whilst retaining simple framework to give balance and maintain strength.

**FLASHING.**—"Renown" Windows are fitted with pressed galvanized iron flashing trays at each sill-end, fixed with galvanized clouts, thus ensuring rustless, properly fabricated waterproofing and saving costly, and sometimes faulty, job flashing.

### Application

The "600" Series is equally suited to timber frame, brick veneer or all brick construction.

### Dimensions

The range of sizes available is given below and in the following pages. Frame sizes are arranged to suit brickwork bond—the design permitting easy installation in all types of construction.

### DIMENSIONS 600 SERIES

"Renown" Window No.	Stud opening for frame and brick veneer construction	Extreme Overall Size	Sash Sizes
611	3' 5 1/2" x 2' 3 1/2"	3' 6 1/2" x 2' 4 1/2"	2' 1 1/2" x 2' 1 1/2"
612	3' 5 1/2" x 3' 1 1/2"	3' 6 1/2" x 3' 2 1/2"	3' 1 1/2" x 2' 1 1/2"
613	3' 5 1/2" x 3' 5 1/2"	3' 6 1/2" x 3' 5 1/2"	3' 1 1/2" x 3' 5 1/2"
614	4' 6 1/2" x 3' 5 1/2"	4' 7 1/2" x 3' 6 1/2"	4' 3 1/2" x 2' 1 1/2"
615	4' 6 1/2" x 3' 1 1/2"	4' 7 1/2" x 3' 2 1/2"	4' 3 1/2" x 3' 1 1/2"
616	4' 6 1/2" x 3' 5 1/2"	4' 7 1/2" x 3' 6 1/2"	4' 3 1/2" x 3' 5 1/2"
617	4' 6 1/2" x 4' 2 1/2"	4' 7 1/2" x 4' 3 1/2"	4' 3 1/2" x 4' 2 1/2"
618	4' 6 1/2" x 3' 1 1/2"	4' 7 1/2" x 3' 2 1/2"	4' 3 1/2" x 3' 1 1/2"
621	3' 5 1/2" x 6' 2 1/2"	3' 6 1/2" x 6' 3 1/2"	3' 1 1/2" x 3' 1 1/2"
622	4' 6 1/2" x 6' 2 1/2"	4' 7 1/2" x 6' 3 1/2"	4' 3 1/2" x 3' 1 1/2"
623	4' 6 1/2" x 6' 5 1/2"	4' 7 1/2" x 6' 6 1/2"	4' 3 1/2" x 4' 2 1/2"
624	6' 5 1/2" x 6' 2 1/2"	6' 6 1/2" x 6' 3 1/2"	6' 3 1/2" x 3' 1 1/2"
631	4' 6 1/2" x 5' 3 1/2"	4' 7 1/2" x 5' 4 1/2"	4' 3 1/2" x 2' 1 1/2"
632	4' 6 1/2" x 3' 5 1/2"	4' 7 1/2" x 3' 6 1/2"	4' 3 1/2" x 3' 1 1/2"
633	4' 6 1/2" x 3' 1 1/2"	4' 7 1/2" x 3' 2 1/2"	4' 3 1/2" x 2' 1 1/2"
641	1' 4 1/2" x 2' 2 1/2"	1' 5 1/2" x 2' 3 1/2"	Louvre with Screen Cabinet
643	3' 5 1/2" x 1' 4 1/2"	(Overall)	
648	(Combined door and double-hung side-light, Door 6' 8" x 2' 10" x 1 1/2" fin.)		
649	3' 1 1/2" x 3' 1 1/2" 7' 0" x 3' 2 1/2"   4' 3 1/2" x 2' 1 1/2"		
	(Combined door and fixed side-light, Door 6' 8" x 2' 10" x 1 1/2" fin.)		
	6' 1 1/2" x 4' 6 1/2" 7' 0" x 4' 7 1/2"   4' 3 1/2" x 2' 1 1/2"		

\* Centre sash 4' 3 1/2" x 3' 5 1/2".

\* Centre sash 4' 2 1/2" x 3' 5 1/2"



Brick Veneer residence in the course of construction. This illustration shows a method of installing "Renown" Windows. In this case, the frame will be set in the brickwork, and the face linings will be flush with the face of the brickwork. Sashes have been removed to avoid damage to glass, but this is not usual. However, it is a simple matter to replace the sashes in the frames on completion of the brickwork.





An example of the pleasing effect obtained by the use of "Renown" Windows and Doors. Note how well the windows and doors harmonise with the simple beauty of this timber residence.

### SPECIFICATION: "600" SERIES

#### All Timbers Kiln Dried and Reconditioned

##### FRAME

Styles and head 4½ in. x 1½ in. finished, grooved for ½ in. parting bead, styles with two ½ in. half round sinkings to take "Unique" spiral sash balances.

Tilted sill machined from 7 in. x 2 in. jarrah, sunk, bevelled, and throated.

Outside hinges 3½ in. x 1 in. finished sizes, mitred at head. Sills grooved to take Masonite guide strips for sliding flywire screens.

Outside linings act as architraves and stop for weatherboard or fibre cement sheet, or form cavity cleats for brick veneer building.

Staff head 1½ in. x 1 in. fin. sizes with rounded edge.

Mullions 4½ in. x 1½ in. fin. with grooves for parting head and sinkings to take "Unique" spiral sash balances, with outside lining 2½ in. x 1 in. fin. sizes, grooved for Masonite guide strips.

##### GLAZES

Styles 1½ in. x 1½ in. fin. sizes with half round groove to take spiral sash balances.

Bottom rail 2½ in. x 1½ in. fin. sizes splayed to suit sill and sotted to take balance sash attachment.

Meeting rails 1½ in. x 1½ in. fin. sizes.

Bars 1½ in. x 1 in. fin. sizes.

##### ANGLE WINDOWS

The careful designing permits any combination of these windows to be used and by fixing corner facings as shown

##### LOUVER FRAME

Framing as for windows, grooved and with three wired cast louvers 6½ in. wide set to slope, and including flywire screen for inside.

##### BATHROOM CABINET

3 ft. 3 in. high x 1 ft. 4 in. wide overall, made to suit windows Nos. 611, 612, 613 and 621, 1 in. carcass with plywood back, four shelves, flush door with 24 in. x 11 in. mirror planted on face of door with mitred surround.

##### GLAZING

Glass bedded, sprigged and front puttied. Standard is based on 16 oz. glass, according to availability.

##### FLYWIRE SCREENS

A feature of "Renown" windows is the provision of sliding flywire screens. Screens are covered with Zincoid flywire bedded on

##### ARCHITRAVE AND BEDMOLD

Architrave 2½ in. x 1½ in. bullmoulded on one edge and mitred for inside of frames all around.

Bedmold 1½ in. x 1½ in. segment for under sill externally (required for weatherboard construction).

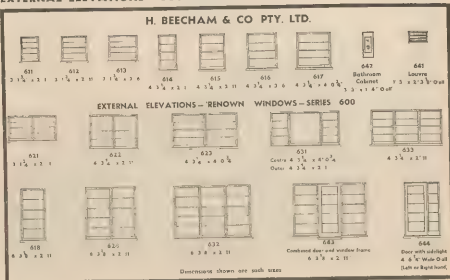
##### WINDMOLD

Included for brick and brick veneer construction.

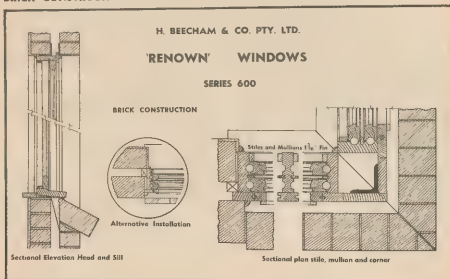
##### BUILDING IN CLEATS

Not supplied with frames.

## EXTERNAL ELEVATIONS—"600" SERIES



## BRICK CONSTRUCTION—"600" SERIES



BRICK VENEER CONSTRUCTION—"600" SERIES

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H. BEECHAM & CO. PTY. LTD.

'RENOWN' WINDOWS

SERIES 600

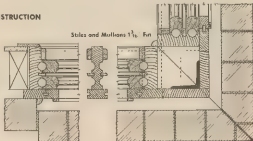
BRICK VENEER CONSTRUCTION



Sectional Elevation Head and Sill



Alternative Installation



Sectional plan stile, mullion, corner. With stud and trimmer detail.

TIMBER CONSTRUCTION—"600" SERIES

H. BEECHAM & CO. PTY. LTD.

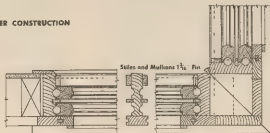
'RENOWN' WINDOWS

SERIES 600

TIMBER CONSTRUCTION



Sectional Elevation Head and Sill



Sectional plan stile, mullion and corner. With stud and trimmer detail.



Portion of the drying kiln installation, showing three chambers and a reconditioner, at our Lonsdale Street premises. Being adjacent to our factory where "Renown" Windows and Doors are made, handling and haulage costs are reduced to a minimum, with a consequent saving of time and improved output. The equipment featured on this page materially assists in making possible the production of the "Renown" line of Windows and Doors.



The Lift Truck pictured above, left, is capable of lifting a stack of sawn timber of nearly 6 tons to a height of 20 ft. This machine is particularly adaptable for use in conjunction with the Straddle Truck. Above, right, is one of our Hyster Straddle Trucks; these remarkable vehicles have been used extensively in Canada and U.S.A. for some years. H. Beecham & Co. Pty. Ltd. were among the first of the Australian timber companies to recognize the tremendous possibilities of these types of vehicles.

H. BEECHAM & CO. PTY. LTD.



D1C  
Single panel  
Solid moulded  
Ply panels



D2  
Two panel  
Solid moulded  
Solid or ply panels



D3  
Three panel  
Solid moulded  
Solid or ply panels



D5  
Five lay  
Solid moulded  
Solid or ply panels



D1B  
Solid moulded  
Masonry sheathed outside  
between stiles and top rail  
and over bottom rail  
Single panel inside  
between stiles and rails



D1B  
Flush panel  
Both sides

'RENOWN' DOORS



D1A  
Flush sheeted  
With margin strips



D5.5  
Flywire door



Section of solid mould stile



Section of D1B stile

SIZES AVAILABLE

D1A D1B D1C 6'8" x 2'6" and 6'8" x 2'8"  
D2 D3 D5 D1E 6'8" x 2'8"  
D5G D1G D5S 6'8" x 2'6" 6'8" x 2'8" and 6'8" x 2'10"

THICKNESSES

D1A 1 3/4" Fin. D5.5 1 1/2" Fin. All other doors 1 3/4" Fin.



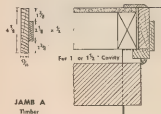
D5G  
Glass door



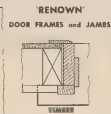
D1G  
Single panel glass

H. BEECHAM & CO. PTY. LTD.

'RENOWN'  
DOOR FRAMES and JAMBS

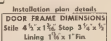


JAMB A  
Timber  
and Brick Veneer  
Construction



JAMB B  
All Brick Construction

BRICK VENEER



Installation plan details  
DOOR FRAME DIMENSIONS  
Stile 4 1/2" x 1 1/4" Stop 3 1/4" x 1 1/4"  
Lining 1 1/2" x 1" Fin.

ALL BRICK



WEATHERBOARDS and FLOORINGS



**BUILDING PANELS  
and  
PREFABRICATED UNITS**

SECTION

**21a**

SECTION

---

Victorian & Interstate Airways Catalogue

---



21a  
1

# STRUCTURAL PANELS



"AIRCRAFT PRINCIPLES APPLIED  
TO BUILDING STRUCTURES"



*Sole Manufacturers:*

**VICTORIAN AND INTERSTATE AIRWAYS LIMITED**  
(BUILDING MATERIALS DIVISION)

**316 MT. ALEXANDER ROAD, ASCOT VALE, W.2**

Telephone: FU 1635, FU 1738

AND AT COMMONWEALTH AERODROME, ESSENDON

Telephone: FU 3110-3111, FU 3173

## 21a

### STRUCTURAL PANELS.

V.I.A. Structural Panels are complete load bearing structural units, combining covering and framework in an integral unit suitable for the rapid erection of demountable or permanent buildings. As the panels are complete units, no additional framing such as posts, studs or columns are required to support roof loads.

Only well-tried materials are used in the construction, combined in a new form for maximum structural efficiency. Structural Panels are designed on the "stressed skin" principle used in aircraft construction, which allows the use of a much lighter framework than is possible with orthodox methods.

### APPLICATIONS.

Structural Panels can be applied to the following:—

- Demountable Houses, Huts, or Barracks.
- Permanent Dwellings.
- Factories, Stores, Garages.
- Partitions, Counters, Storage Walls.
- Roofs, Floors.
- Kiln-Drying Rooms.
- Builders' Movable Huts, Lavatories, etc.
- Demountable Factory Walls.

### BASIC MODULE.

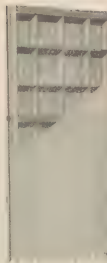
V.I.A. Structural Panels are based on a standard width of 4 ft. 0 in. Using 2 ft. and 1 ft. wide filler panels in addition, the architect can lay out any floor plan he desires.

### THE STANDARD PANEL.

The standard Structural Panel is 1½ in. thick and consists of two faces of ½ in. standard Asbestos Cement sheet bonded to a kiln-dried hardwood frame and core with a waterproof phenolic resin adhesive. The core is closely spaced to stabilize the faces and make them highly puncture resistant. The vertical edges of the panel are grooved to receive a ½ in. x ½ in. sealing strip.

### STRUCTURAL PROPERTIES.

The standard 1½ panel is designed in accordance with the Commonwealth Experimental Building Station's requirements for domestic buildings and will withstand any wind and roof loads on a single story building with an adequate safety factor. A 9 ft. panel will withstand an



TYPICAL STRUCTURAL PANEL

end load of 4,000 lb. per ft. width without bowing; normal roof loads rarely exceed 1,000 lb. per ft. of wall. The same panel will withstand a wind load of 50 lb./sq. ft. Wind loads in this country rarely exceed 16 lb./sq. ft.

The panel can be used as a floor on spans up to 5 ft., provided the upper surface is reinforced to prevent local puncture. Used on edge as a beam with heavier edge members, a panel only 8 ft. deep will safely support a uniform load of 1,000 lb./ft. length over an 8 ft. span.

### IMPACT RESISTANCE.

The faces of the standard panel are closely supported and are proof against all normal rough handling, which cannot be said for ordinary asbestos-cement construction. Puncture tests with a 1 in. square loading tool vary from 150 to over 300 lb. on a standard panel.

### DURABILITY.

Structural Panels are hot pressed with a special phenolic resin adhesive, of the type developed for aircraft plywood. The bonding of asbestos-cement to timber is a new departure, but tests indicate that the durability of the bonded panel is equal to that of its components, even under the worst conditions.

### INSULATION.

The standard panel has an insulating value of the same order as a fibre-covered plaster-lined timber house, but for airtight walls it is recommended that the panel be supplied with 1 in. of mineral fibre insulation. The insulated panel has even been used successfully with a heat reflecting paint as a roof panel. Tests are now under way to determine the overall heat transfer coefficient (U) of the standard panel with and without insulation.

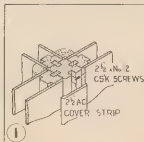
### SOUND INSULATION.

As the panels are faced with dense material closely supported, their sound damping properties are good. The insulated panels being superior in this respect. The panels definitely will not "drum" or resonate in normal use.

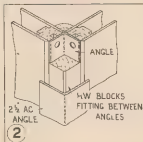
### RANGE OF PANELS.

The available range of panels is set out in the following table. This has been drawn up as the minimum range needed to design building of one story without any major limitations on size of windows, etc. If the demand warrants it, the range may be altered or increased or special panels made up.

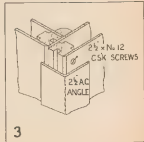
JOINT WITH STANDARD POST



BUTTED CORNER JOINT



LAPPED CORNER JOINT





TYPE	SIZE	PURPOSE
A	3 ft x 4 ft	Basic structural panel.
B	3 ft x 4 ft	Door panel.
C	2 ft x 4 ft	Under window panel.
D	2 ft x 4 ft	Under window panel.
E	2 ft x 4 ft	Over window panel.
F	2 ft x 4 ft	Over fireplace panel.
G	2 ft x 4 ft	Panel with 2 ft x 1 ft. 6 in. offset window.
H	2 ft x 4 ft	Flter panel.
I	5 ft x 1 ft	#12 panel.
J	2 ft x 8 ft	Beam for spanning 8 ft. windows.

Panels C, D, E and F can obviously be used to give a large number of window and fireplace arrangements. In setting out the floor plan of a building using the 4 ft. module, it is important to realise that as a panel cannot be made to the module size minus the wall thickness (e.g. 4 ft. minus 1 1/2 in. = 3 ft. 10 1/2 in.) the dimension of some walls on certain designs must be increased by a wall thickness. For this purpose a standard post 1 1/2 in. square is available. (Fig. 1.)

The figure on the title page shows a single room using at least one of each type of panel.

### STRUCTURAL DESIGN.

The architect or designer must ensure that there is always sufficient solid panel to support the roof loads at any point. For instance, an 8 ft. window should have at least one solid panel on each side, and a door panel should not have a window panel next to it on the door side. Corner windows can be used provided a column can be incorporated to support the junction of the panels above. Steel corner windows are ideal for the purpose. With 8 ft. windows, the 8 ft. x 2 ft. beam panel over the window must be supported at each end by posts incorporated in the window frames.

### CORNER JOINTS.

The wind loads on any wall must be transferred to the adjacent walls at right angles to it. Consequently, the corner joints must be rigid and well fastened. Recommended corner joints are shown in Figs. 2, 3 and 4. Where a wall is more than 12 ft. long between walls at right angles to it, the ceiling or roof members on this wall must be cross braced horizontally to prevent movement of the top of the wall under wind loads.

### ERECTION AND FASTENING.

Single panel erection is recommended where only limited labour is available. It implies the successive erection of panels in the vertical position, each panel being fastened at the top and bottom as it is put in position. With this method a bottom fastening through the skirting board is used, as the panel can only be fastened from the side. With sufficient labour or mechanical means to hoist the wall into position, complete wall erection is recommended.

This means that the wall is made up lying flat, preferably on the floor joints of the building, and the bottom fastening is made by screwing or nailing into the bottom of the panel as shown in Fig. 5.

As the top fastening is accessible from the top or sides, the method of fastening does not depend on the method of erection. A suitable method is shown in Fig. 7.

With either method of erection a suitable cramp must be used to force the panels tightly together on the sealing strip while the top and bottom fastenings are being made. If the vertical joint between the panels is not made tight, movement in the walls may occur, as well as difficulty in sealing the joint against the weather. Every 9 ft. panel has a solid cross rail built into it at a height of 4 ft. 8 in., so that screws may be fastened through or into the panel at the top, bottom, and mid height.

Intermediate walls can be fastened as in Figs. 1 and 5.

### ROOFING.

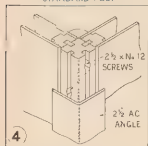
Practically any type of roof can be used with "Structural Panels" provided the load on the walls does not greatly exceed 1,000 lb./ft. length of wall. With orthodox construction, i.e., rafters at 18 in. or 24 in. centres, the roof members can be fastened direct to the top plate as in Fig. 7, and the same top plate can be used on the internal walls, which can then carry some of the roof load in the usual way. With this construction tile roofs can be safely used. Plaster ceilings can be fixed separately in each room, as shown in Fig. 8. Where a cheaper roof is required, corrugated iron or asbestos-cement on timber or steel trusses is recommended. The trusses should be at not more than 4 ft. centres and timber or steel splayed at least 12 in. long must be used between the truss and the top plate to distribute the load on the panel.

Another advantage of the truss type roof is that, by using a continuous ceiling spanning from outer wall to outer wall, the internal walls are relieved of roof loads and can be erected after roofing and flooring.

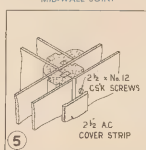
### WATER-PROOFING.

The body of the panel is water-proof, and although the unpainted fibre cement will absorb moisture, with time the sheet becomes impervious. However, as in ordinary building construction, horizontal joints must be sealed against the entry of water by flashing. A standard metal flashing is supplied for use at the foot of the panels as shown in Fig. 5, and the same flashing is used in conjunction with a rubber sealing strip at window and door heads, and at the window sill. Vertical joints are sealed by the 3 in. x 3 in. hardwood strip inserted between the panels. This should be well covered and the slots painted with red lead in oil or similar primer when the panels are erected.

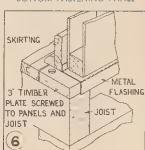
CORNER JOINT WITH  
STANDARD POST



MID-WALL JOINT



BOTTOM FASTENING PANEL



## 21a

Additional protection against driving rain is given by fastening a 2 in. asbestos-cement cover strip over the joint. A bituminous felt strip put down with bitumen can be used under this strip if the panels are used for roofing. Massics are recommended for sealing joints in buildings intended for re-erection, but should always be covered to minimize drying out and shrinkage.

### INSTALLATION OF WIRING.

To facilitate the installation of electric wiring in a completed building, all 9 ft. x 4 ft. panels have 11 in. holes bored through the cross rails 6 in. from each edge of the panel. Thus, the panels can be wired in tough rubber covered wire or with V.I.R. plain or in 8 in. conduit on either side through the top or bottom plates. The fitting of switches and power points is relatively simple. The cement sheet is cut out to take the fitting, small wooden backing blocks 18 in. thick inserted between the faces, the connections are made and the fitting fastened by screws through the sheet into the blocks.

### FINISHES.

In recent years considerable work has been done on finishes for asbestos-cement and a wide variety of excellent finishes are now available. If the sheets are allowed to weather for three to six months to reduce their alkalinity before painting, practically any finish can be applied. If new or unweathered sheets are to be used, the range is somewhat reduced, and more care must be used in applying the finishes. Samples of the following finishes can be seen at the factory:

- Emulsion Paint.
- Casein Paint (internal and external)
- Oil Vehicle Paints and Enamels.
- Cement Paint.
- Milk White Paste Paint.
- Kalsomine.
- Fabric and Paper.
- Wood Veneer.

As the panels are ground to a 45 deg. bevel at the edges, the butt joints between the panels may be left open or filled and covered with paper or fabric on internal joints. Complete information on the application and relative merits of the finishes listed is available if required.

### STANDARD ACCESSORIES.

- The following accessories specially designed to suit the standard panels can be supplied.
- Doors, 6 ft. 6 in. x 2 ft. 6 in.
- Door Frames.
- Top and Bottom Plates (timber only).
- Standard Posts 14 in. x 14 in. timber slotted 4 sides.
- Flashing (galvanized iron, lead or copper).

### BUILDING APPROVAL.

At present only one municipal authority has been approached in order to obtain approval of the construction, and this authority has given approval for the erection of a trial house. Until this has been erected, it is not proposed to seek approval from other authorities. However, if required, details of the construction will be submitted to any municipal authority for approval.

### PERMITS

The supply of asbestos-cement sheet for Structural Panels is at present controlled by Government Regulation, and panels can therefore not be supplied to customers without a permit.

### DEVELOPMENT.

As the material supply position improves, the following items will become available:-

- Roof Trusses (Timber and Steel).
- Windows (Timber).
- Floor Panels, faced with wear-resisting material.
- Small Demountable structures for Stores, Garages, etc.
- Roof Panels.
- Panels with plywood or Masonite faces for lightweight structures.
- Panels with special facings, such as metal, wood veneer, etc.

A cheaper panel having a resistance to impact slightly better than that of normal asbestos-cement construction can be supplied for buildings such as garages, country dwellings, work-and-homes, etc. This panel may be single sided, leaving the lining to the customer.

As a long-term development it is planned to replace the timber core of the standard panel with corrugated fire-cement. (Fig. 9, patent applied for.) This will give two sizes of standard panel, 18 in. thick, for light structures, and 22 in. thick for industrial buildings and dwellings, which will be cheaper than the timber-cored panel, besides being more resistant to fire and insect attack.

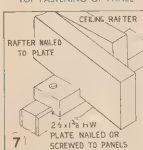
### FURTHER INFORMATION.

Space will not permit the publication of detailed methods of erection, exact test figures, or suggested applications, etc. Full details of these are available on application.

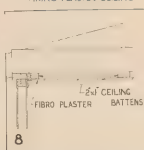
### TECHNICAL ASSISTANCE.

Our engineers will be glad to discuss the application of Structural Panels to any problem, and we would prefer our customers to discuss any new application with them before proceeding with their design.

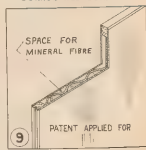
TOP FASTENING OF PANEL



FIXING PLASTER CEILING



CORRUGATED CORE PANEL



**INSULATION and  
ACOUSTICS**

SECTION

**22**

SECTION

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CATALOGUES 1 to 10

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# CORK INDUSTRIES (AUSTRALIA) PTY. LTD.

GIPPS & WAVERLEY STREETS, RICHMOND  
MELBOURNE, E.1

22

Telephone: J5136

## PIPE SECTIONAL LAGGING

"Australcork" Pipe Sectional Lagging is made from solid moulded cork granules baked to produce a light, rigid, insulating material; not machined from corkboard. Used for insulating all classes of hot, cold or chilled pipe lines, excepting steam. The particular feature of "Australcork" Pipe Lagging that makes it the most efficient sectional insulation in Australia is the unique Spigot and faucet moulded joint—movements in the pipe line cannot break the joints, the full thickness of the insulation being maintained under all conditions.

Available in solid one-piece sections (for threading on to pipes) or in eight moulded sections (for applying after pipes are in position) both types are supplied with the spigot and faucet joint and are finished on the outside

Note Moulded Spigot and Faucet Joint.



Half Section Moulded

One-Piece Moulded

either plain or bitumen coated. Standard length is 8 ft. in wall thicknesses, as set out in the table hereunder:

### STANDARD THICKNESSES OF CORK WALL

Pipe diameter outside	1	1 1/2	2	2 1/2	3	4	5
Thickness of cork inches	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3



ALTERNATIVE METHODS OF  
SUPPORTING INSULATED PIPE LINES

RAMSAY & CATALOGUE

## "AUSTRALCORK"

## CORKBOARD



The illustration above shows the method of packing "Australcork" in sections—an efficient protection that ensures a perfect product on arrival at the job

"Australcork" is used as a wall insulation to prevent the entrance of heat, or to maintain cold temperatures in cold storage rooms, freezing and constant temperature rooms.

It is used to eliminate heat losses, as well as to prevent the transmission of the summer's heat through the walls, ceilings and roofs of practically every type of building.

Used on flat roofs, it prevents condensation on the underside of the roof slabs.

For machines, it is used as an insulating or isolating medium to reduce permanently the transmission of sound and vibration to an absolute minimum.

"Australcork" gives tests equal to the best brands of cork insulation made in England, Europe or America.

We maintain large stocks, and can give effective service in all States.

Manufacture—"Australcork" boards are made of pure granulated cork compressed into moulds of desired thickness and baked at a moderate temperature for several hours. This process liquefies the natural gum of the cork which acts as a binder and protects the cork slab from moisture. Being made of pure granulated cork, and thus preserving the natural insulating qualities of cork bark, "Australcork" boards must be an excellent non-conductor of heat. This quality is evidenced by its low thermal conductivity as under—

Thermal Conductivity.—23 B.T.U.'s per hr. per sq. ft., per 1 inch thickness; per degree temperature difference between the sides.

Practicability—"Australcork" boards may be cut, sawn and handled as easily as timber of the same size. They may be readily set in Portland cement or bitumen with the same ease as a common building material. There is little or no waste from sawing and fitting, as the left over pieces can be neatly and tightly fitted in. They form a rigid, practical surface with an excellent base for the application of plaster and tiles. No lathing is required.

"Australcork" boards are:

Non-absorbent

Fire-retardant

Sanitary

and provide permanent structural insulation.

STANDARD SIZES—36 in. x 12 in. by

Thickness in inches	1	1 1/2	2	3	4
Weight per sq. ft. in lbs.	8	12 1/2	18	24	32

### THICKNESSES TO USE

For temperature -	20 deg. to 10 deg F	13 in.	20 deg. to 10 deg F	13 in.	
10 deg. to 5 deg F	10 in.	40 deg. to 32 deg F	4 in.	6 deg. to 5 deg F	4 in.
5 deg. to 0 deg F	4 in.	10 deg. to 0 deg F	3 in.	0 deg. to 10 deg F	3 in.
0 deg. to 10 deg F	3 in.	60 deg. and above	1 in.		

# Cellconcrete

for INSULATION  $\frac{22}{2}$

## REFRIGERATION

Use *Cellconcrete* for COLD Storage Insulation

No other Insulation has all these features:

- |                          |                        |
|--------------------------|------------------------|
| 1. High Insulation Value | 6. Fire-proof          |
| 2. Weather-proof         | 7. Odourless           |
| 3. Moisture-proof        | 8. Inorganic           |
| 4. Vermin-proof          | 9. Structurally Strong |
| 5. Rot-proof             | 10. Low Cost.          |

For Temperatures (F) Use

—25° to —15° 11"

—5° to +5° 8"

15° to 25° 6"

Other temperatures on application.

*Cellconcrete* has been used for insulation in the following Cold Stores in various parts of Australia:—

Cape River Abattoirs, Queensland.

Brisbane Abattoirs, Queensland.

Newcastle Abattoirs, N.S.W.

Elverstone Abattoirs, N.S.W.

Homebush Abattoirs, N.S.W.

Auburn Abattoirs, N.S.W.

Endigo Abattoirs, Victoria.

Waterside Cold Stores, Sydney.

Sydney Cold Stores, N.S.W.

Queensland Breweries, Queensland.

N.S.W. Egg Board, N.S.W.

Korshook Cold Stores, S.A.

Lenswood Cold Stores, S.A.

Summerside Cold Stores, S.A.

and many others.



Insulation Blocks:

18 in. x 11 in. x 3 in.

4 in. x 3 in. x 1 in.

Building Blocks

12 in. x 6 in. x 4 in.

Use for Cool Rooms, Freezers, Ice Tanks, Ducts in Meat Works, Dairies, Batter Factories, Fruit Stores, Ice Cream Factories, Ice Works, Hotels, Restaurants, and wherever Cold Storage is needed.

*Cellconcrete* is the lowest priced, efficient insulation in Australia, used and proved throughout the world for over 20 years.

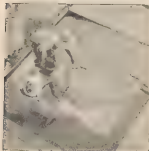
## BUILDING CONSTRUCTION

*Cellconcrete* is ideal for use in flats and office buildings. For soundproof walls and floors. For partition walls it is less than half the weight of brick and concrete, made in block form or poured in situ.

INSULATED FLAT ROOFS are economical and permanent if *Cellconcrete* is used to provide, in one, the insulation and grading.

Always specify "Evershed" Asbestos Built-up Roofs by R.B.S.

(See under "ROOFING")



ROOF & BUILDING SERVICE PTY. LTD., 289 Queen Street, Brisbane - B4091

70 King Street, Sydney - BX1431

SPECIALIZED BUILDING SERVICES PTY. LTD., 220 Collins St. Melb. - Central 3979

GRACE BROS., Swigg Street, Adelaide - J7088

BUILDING & INSULATION SERVICE CO., Economic Chambers, Perth - B 5492

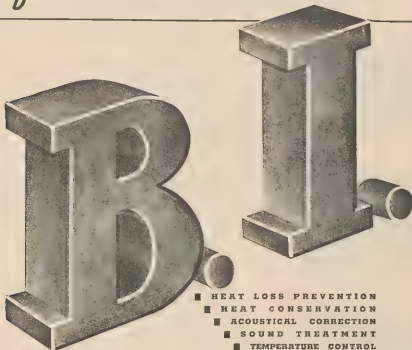
—KIMBAY & CATALOGUE



*Information*

ON THE USE OF  
B.I. SLAGWOOL AND  
SLAGWOOL PRODUCTS

22  
3



- HEAT LOSS PREVENTION
- HEAT CONSERVATION
- ACOUSTICAL CORRECTION
- SOUND TREATMENT
- TEMPERATURE CONTROL
- REFRIGERATION

BRADFORD

*Insulation* PTY. LTD.

Head Office: SYDNEY  
Factories: NEWCASTLE  
ADELAIDE

Branch Offices: MELBOURNE  
ADELAIDE

Factory Representatives: ADELAIDE

PERTH

NEW ZEALAND

Agents: BRISBANE

PERTH

NEW ZEALAND

135 Sussex Street  
Clyde Street, Hamilton  
Rosewater Road, Port Adelaide

422 Collins Street  
Shell House, 5th Terrace

J. K. Phipps, Shell House, 5th Terrace

T. F. Bantke, 294 Murray Street

F. F. Mann Ltd., 146 Lichfield Street

Becker & Co. Ltd., 67 Eagle Street

Flower Davies & Johnson Ltd., 418 Murray Street

Winstone Ltd., Auckland, Wellington, Palmerston North, Christchurch, Dunedin

Phones M 3038, M 3291

Phone Han. 910

Phone J 1604

Phone MU 3106

Phone C 7358

Phone C 7257

Phone B 5827

Christchurch

Phone B 3804

Phone B 5831

THE PRIMARY FUNCTION OF INSULATION IS THE ECONOMIC MAINTENANCE OF THE DESIRED TEMPERATURE

**BUILDING INSULATION, SOUNDPROOFING  
AND ACOUSTICAL CORRECTION . . . . .**

**22**

**3**



**B.I. Loose Slagwool  
Easily Worked and Packed**



**B.I. Granulated Slagwool  
Easily Poured from Bag**



**B.I. Slagwool Blankets  
Are Easily Fixed**



**B.I. Slagwool Batts  
Resiliency Holds Them in Place**

**B.I. LOOSE SLAGWOOL . . .**

B.I. LOOSE SLAGWOOL is prepared from selected wool of long fibre, white in colour, and similar to fluffy cotton in appearance and entirely non-combustible. Used for walls, under floors and ceilings in new construction. Should be packed to an even density of 12-14 lbs. per cubic foot, care being taken to leave no void spaces.

Packed in large bags, 84 lbs. per bag, 27 bags to 1 ton.

Shipping details—Bag size: 18 in. x 12 in. x 48 in. Cub. capacity: 6 cu. ft.

**B.I. GRANULATED SLAGWOOL (Building Grade) . . .**

B.I. GRANULATED SLAGWOOL (Building Grade) consists of individually formed pellets approximately  $\frac{1}{4}$  in. in diameter. Used in new and existing structures: should be poured between joists and into hollow spaces between studding to full wall thickness. Covering capacity, 1,920 sq. ft., 2 in. thick, of a density of 7 lbs. per cu. ft.

Packed in multi-wall paper bags, 35 lbs. per bag, 64 bags to 1 ton.

Coverage—1,920 sq. ft., 2 in. thick per ton.

Shipping details—Bag size: 48 in. x 18 in. x 6 in. Cub. capacity: 2.8 cu. ft.

**B.I. SLAGWOOL BLANKETS . . .**

B.I. SLAGWOOL BLANKETS. Made from long fibre wool, felted and stitched in heavy Kraft paper. Available in sizes to suit requirements. Used between rafters on sloping roofs and other overhead areas, attic walls, partitions, etc. May be cut with ordinary knife or shears.

Standard size: 12 ft. x 3 ft. x 1 in. 36 sq. ft. per roll.

**B.I. SLAGWOOL BATTS . . .**

B.I. SLAGWOOL BATTS have a compact felted construction of sufficient thickness to fill the space between studding. Used for walls under floors and ceilings in buildings under construction, quickly and easily applied ensures perfect insulation, easily cut to fit odd spacing.

Packed in cartons, standard size, 22 in. x 16 in. x 2 in.  
12 Batts per carton.

Shipping details—Carton size: 22 $\frac{1}{2}$  in. x 16 $\frac{1}{2}$  in. x 24 $\frac{1}{2}$  in.  
Weight: 28 lbs. per carton. Cub. capacity: 5.2 cu. ft.



**B.I. SLAGWOOL** is made from blast furnace slag. The slag is selected and blended to produce a melt of correct chemical composition such that, when blown with a jet of dry high-pressure steam, an unusually long fibre of fine, strong staple is obtained, which is, at the same time, soft and flexible.

These fibres, as they float and finally settle in a receiving room, interlace naturally and form a fluffy blanket, entrapping millions of dead air cells of minute size. These still, or dead, air cells constitute the barrier for the prevention of heat transfer by conduction and convection. Radiant heat is transferred by wave motion. B.I. Slagwool is almost perfectly opaque to radiant heat.

It is seen how the use of B.I. Slagwool proves such an effective barrier to heat transmission.

In full wall thickness, B.I. Slagwool insulation stops the flow of heat as effectively as a concrete wall 12 ft. thick. So effective is B.I. Slagwool insulation in retarding heat flow that homes, during the summer months, are kept as much as 15 degrees cooler than the outside temperatures. Upstairs rooms (often unbearable in uninsulated homes) are usually no more than one degree warmer than those downstairs.

Careful tests in some of Australia's hottest country districts show that Bradford Insulation's SLAGWOOL will reduce room temperatures as much as 15 degrees.

Domestic insulation is the next step forward in the development of the Australian home—real progress in comfortable living at surprisingly low cost.

### WALLS . . .

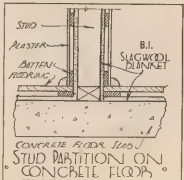
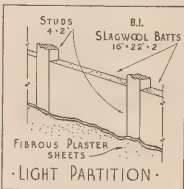
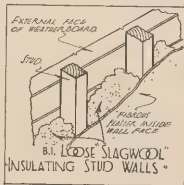
Slagwool in batts, or loose, is easy to install during construction. In granulated form, may be poured into side walls if house is already built.

### PARTITIONS . . .

New office, flat or home partitions can readily be insulated in several ways. The space between the two outer coverings of fibrous plaster or other building board can be filled with either B.I. Slagwool Building Batts or B.I. Granulated Slagwool for both heat and sound insulation. Where sound-proofing only is desired, it is preferable to hang loosely a B.I. Slagwool Blanket.

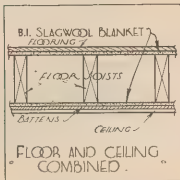
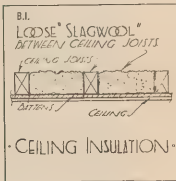
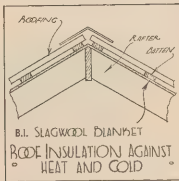
### CEILINGS . . .

SLAGWOOL in granulated form, over concrete, prevents heat leakage, eliminates condensation and drip-stained ceilings.



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#### **FIREPROOF . . .**

Unlike many insulating materials described as being fire-resistant, B.I. Slagwool insulation is absolutely fire-proof. The hollow spaces in walls, which ordinarily act as flues in the event of fire, when completely filled with B.I. Slagwool, act as a complete barrier.

#### **HYGIENIC . . .**

B.I. SLAGWOOL INSULATION, being a pure mineral is odorless, and will not absorb odors; will not harbor borers, white ants, silverfish, vermin, etc. It will not deteriorate, disintegrate or decompose.

#### **MOISTURE REPELLENT . . .**

Exhaustive tests show that B.I. Slagwool insulation is highly moisture repellent. Samples exposed to completely saturated atmospheres for 100 hours gained less than 0.02 per cent. in weight due to moisture absorption.

This is extremely important, since insulating materials which absorb moisture soon have but little better insulating efficiency than water itself.

#### **LIGHT IN WEIGHT. WILL NOT SETTLE . . .**

B.I. Slagwool insulation is outstanding for its lightness in weight. As applied, it weighs approximately 1 lb. per sq. ft., 2 in. thick. At the same time it has the necessary mass to hold itself in position over an indefinite period. It will not settle or drift, leaving empty or unprotected spaces.

#### **FLEXIBLE . . .**

B.I. Slagwool, light in weight and flexible, may be used in any irregular surface, round pipes and ducts, into corners, or over any projection, without breaking the continuity of insulation and at a minimum labor cost.

#### **THERMAL CONDUCTIVITY . . .**

The heat transmission rate, or "k" factor, of B.I. Slagwool insulation conducted by authorities such as the Bureau of Standards and the Council for Scientific and Industrial Research, is given as the remarkably low figure of 0.27 B.T.U. per sq. ft. per hour per 1 in. thickness per °F. temperature difference at a mean temperature of 70° F.

#### **APPLICATION . . .**

B.I. SLAGWOOL can be installed at very low labor costs. It is easily handled, cut and erected with a minimum of tools and no special skill is required.

**A DROP OF 15° F. IN SUMMER TEMPERATURE BY USING B.I. SLAGWOOL AS CEILING INSULATION**



Cathode Ray Oscillograph



Sound Level Meter



Amplifier



Oscillator



Vibration Meter

## SOUND TREATMENT & ACOUSTICAL CORRECTION

Sound treatment and acoustical correction permit the exclusion of unwanted external noise, while ensuring clarity and purity of wanted tones. B.I. Acoustical Division is available in a consulting capacity to analyse and ascertain the necessary treatment, while B.I. field staff is fully experienced in the application of such corrective treatment. B.I. holds over two hundred years' experience in all types of acoustical surveys. In addition to laboratory equipment. This equipment is standardised to National Standards, and thus these surveys conform to the latest accepted international practice in acoustic treatment and sound proofing. Consultation with B.I. technicians and their equipment will give unrivalled service in this sphere.

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Dear Mr. Architect

The problems of acoustics today are exciting the minds of architects and sound engineers the world over. People generally have become sound conscious, and as you, a practising architect, are aware, great emphasis is placed on both correct acoustics in auditoriums, theatres, etc., and noise suppression in industrial offices, lecture theatres and similar projects.

We have therefore, after many years' experience in the manufacture of thermal and sound insulating materials, established an Acoustical Division to assist you solve your technical problems. This service is administered by a competent Acoustic Engineer and Physicist, whose extensive experience coupled with most up-to-date testing equipment, is always available.

Some examples of our service may help you to visualise the scope of the Division.

First of all, let us consider a new theatre or hall you are commissioned to design. We can give you an accurate laboratory acoustic analysis that you can readily apply to your design before acceptance of drawings in the full knowledge that your project is now acoustically correct as well as conforming to architectural aesthetics.

Then, another aspect on which you have a building which must be redesigned as it is noisy and/or flat, and the requirements are for quiet and comfort; we can instrumentally analyse the building and show you the troublesome spots requiring special attention and all necessary 'proofing' to be applied.

And finally, in a totally different circumstance from either of the preceding examples an actual piece of fabric which requires some insulating treatment, maybe, but still noise and vibration filter through and working conditions are most unpleasant, our vibration testing and sound level equipment can provide the answer to these problems quickly and certainly.

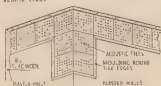
For all such advice and assistance we would ask that you refer to the standards of our sound and noise measurements as laid down by the Standards Association, L.S.3, at the National Physical Lab., England, for Council of Scientific and Industrial Research, which are international standards.

So Sir, in bringing before you our Acoustic Division we trust you will use this service fully, and assure you of our utmost co-operation at all times.

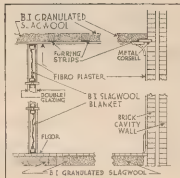
Yours faithfully,

BRADFORD INSULATION PTY. LTD.

### CEILING TREATMENT



TREATMENT FOR CORNER OF ROOM



## INDUSTRIAL INSULATION . . .

B.I. Slagwool will withstand continuous high temperature without deterioration. For normal repair work, it is easily removed and replaced without loss. Being chemically inert it cannot interfere with its surroundings nor maintain any type of growth, either animal, such as mice or white ants, or vegetable mould, fungus, mildew, etc. Our Technical Division will freely advise all enquirers.

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B.I. Loose Slagwool packed to a density of .46 lbs. per cu. ft. in the walls and floor of the modern gas or electric stove prevents considerable loss of effective heat supplied to the food, thus keeping costs down ultimately saving coal.

Automatic oven temperatures controlling devices are able to perform their function more accurately if the oven is insulated. B.I. Slagwool does not absorb cooking odors, and subsequently liberates them.

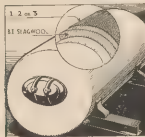
In summer, a well insulated stove means a cooler kitchen.

**B.I. Loose Slagwool  
Odorless**



Insulation of the hot water storage tank is imperative. Most electric hot water systems operate for heating during the off-peak load period, which means that a large volume of water must be kept at approximately 170° F. for up to 8 hours. This heat retention is ably performed with 3 in. thickness B.I. Granulated Slagwool, which can be poured, directly from the bag, between the outer shell and the copper storage tank. Absolutely no plant is required for this operation.

**B.I. Loose Slagwool  
Non-Combustible**



It is well known, but yet not so well appreciated, that boiler efficiencies are raised by preventing heat losses from the hot boiler surface.

With a boiler steam pressure of 100 lbs. per sq. in., each sq. ft. of uninsulated surface wastes 4 ton coal yearly. Varying applications of B.I. Slagwool products will reduce these losses to a minimum.

The finished surface may be—1. B.I. hard-setting plastic. 2. B.I. Slagwool No. 1 Insulating Cement. 3. Zincneal sheet metal.

All these are durable and withstand mechanical damage admirably.

**B.I. Granulated Slagwool  
Heat Retention**

If the temperature of the incoming air to an air-conditioning plant is stable, a much lower running cost is experienced, while the plant capacity can be utilised to the full.

Insulation has the further advantage of eliminating those objectionable noises invariably present.

Effective insulation to reduce noise allows for smaller diameter duct, thus lowering initial plant costs.

**B.I. Slagwool is superior to all other types of insulating materials owing to its flexibility.**

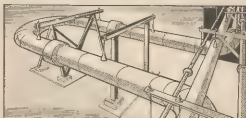
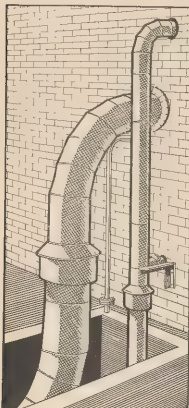


## PIPE INSULATION

The insulation of steam or other hot fluid circulation is of major importance. Not only does it save fuel (coal), but raises plant capacity and thereby increases its efficiency.

The economic aspect of heat loss is such that efficient insulation eventually pays for itself and thus can be classed as a sound capital investment.

B.I. provides a capable, thoroughly experienced and complete insulation service. B.I. technicians and field staff are always available to discuss and execute installation work, so that full value is obtained from the insulation used.



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The methods developed by B.I. for the application of Slagwool to steam pipes have proved highly efficient and satisfactory over a period of years.

B.I. methods of applying B.I. Slagwool encased in wire setting in block or sectional form, and protecting it with sheet metal securely fastened, are easy to remove, for maintenance and the material is wholly replaceable.

Insulated pipe fittings are just as vital as the pipe itself, as considerable heat losses result from bare valves, flanges, heads, etc.

It has been found that fewer gasket failures occur with insulated flanges. B.I. technicians have evolved methods of thermal insulation for pipes carrying temperature high superheated steam; these have proved entirely satisfactory and are used in all the major power houses in Australia.

2½ ft. of 6 in. diam. bare pipe, carrying steam at 100 lbs. per sq. in., have a heat loss equivalent to one ton cool yearly.

12 ft. of 1 in. bare steam, under same conditions, have a similar loss of one ton yearly.

### General Specification Slagwool

#### INSULATION FOR STEAM PIPE

INSULATING MATERIAL	B.I. SLAGWOOL
DENSITY	16-18 lbs. per cubic foot
THERMAL CONDUCTIVITY	0.3 B.T.U./sq. ft./hour/1 in./°F.
THICKNESS OF INSULATION	as required
MATERIALS USED.	
SLAGWOOL	manufactured by Bradford Insulation Pty. Ltd.
Wire Setting	manufactured by P. & S. Wire (Aust.) Pty. Ltd.
Sheet Metal	manufactured by John Lyons (Aust.) Pty. Ltd.
Black Iron Tie Wire	manufactured by Rylands Bros. (Aust.) Pty. Ltd.
Self-Drinking Screws	manufactured by Nailbush Ltd.

#### APPLICATION OF B.I. SLAGWOOL

B.I. Slagwool is first cased in ½ in. mesh galvanised wire setting in a sectional form to fit the pipe line at the required thickness. At a density of approximately 16-18 lbs. per cubic foot. These pads are accurately faced up the surface of the pipe with 16-gauge soft black wire, the pads being closely lapped together so as to leave no gaps. Over the B.I. Slagwool wire mesh pads is applied a sheet metal sheet metal cover, held in position by 16 self-drinking metal screws at approximately 3 in. pitch. The sheet metal is applied at least ½ in. on all sides of the joint between downstands to shed water.

#### BENDS:

All bends are covered with required thickness of B.I. Slagwool, while the sheet metal cover band is a lobster back type.

#### FLANGES, VALVES, STEAM TRAPS AND OTHER FITTINGS:

These will be covered with the required thickness of B.I. Slagwool wire mesh pads corresponding to the adjacent pipe, while the sheet metal cover to cover each fitting are of a removable type to enable minimum removal for maintenance purposes.

AT TRANSMISSION RATE in B.T.U./sq. ft. Temp. diff./hr. for STANDARD RED CREAM NOW INSULATED with 2 in. SLAGWOOL.

MEAN TEMP. RANGE °F.

Year	50	100	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
1964	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1965	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1966	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1967	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1968	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1969	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1970	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1971	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1972	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1973	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1974	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1975	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1976	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1977	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1978	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1979	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1980	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1981	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1982	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1983	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1984	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1985	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770
1986	642	642	648	664	675	685	694	703	712	720	728	735	742	749	756	763	770

HEAT TRANSMISSION RATE IN B.T.U./HR. / FT. SQ. IN. FOR 1 IN. THICKNESS OF INSULATION. TEMPERATURE DIFFERENCE 100°F. (20°C.)

MEAN TEMP. RANGE °F.

Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000
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HEAT TRANSMISSION RATE IN DTU/hr / ft temp diff lined foot for STANDARD RED  
STEAM PIPE INSULATED WITH 1 IN SLAGWOOL.

J. EDNA W. FINEST MAJIN

Year	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000
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HEAT TRANSMISSION RATE is B.T.U./hr. F temp diff inside loop for STANDARD HELIX SLAM PIPE INSULATED with 14 in SLAGWOOL

MEAN TEMP. RANGE °F.

[illegible]

HEAT LOSS FROM BARE SURFACE

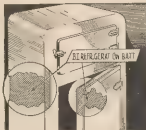
The body of table shows heat loss in B.T.U. per hour per foot of bare steel pipe at various temperature differences.

For finding losses at temperatures between those shown, the B.T.U. increments per degree are given underneath the table.

Temperature Difference, °F	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	0.211	0.23	0.25	0.27	0.29	0.31	0.33	0.35	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.87	0.89	0.91	0.93	0.95	0.97	0.99	1.01	1.03	1.05	1.07	1.09	1.11	1.13	1.15	1.17	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.39	1.41	1.43	1.45	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.61	1.63	1.65	1.67	1.69	1.71	1.73	1.75	1.77	1.79	1.81	1.83	1.85	1.87	1.89	1.91	1.93	1.95	1.97	1.99	2.01	2.03	2.05	2.07	2.09	2.11	2.13	2.15	2.17	2.19	2.21	2.23	2.25	2.27	2.29	2.31	2.33	2.35	2.37	2.39	2.41	2.43	2.45	2.47	2.49	2.51	2.53	2.55	2.57	2.59	2.61	2.63	2.65	2.67	2.69	2.71	2.73	2.75	2.77	2.79	2.81	2.83	2.85	2.87	2.89	2.91	2.93	2.95	2.97	2.99	3.01	3.03	3.05	3.07	3.09	3.11	3.13	3.15	3.17	3.19	3.21	3.23	3.25	3.27	3.29	3.31	3.33	3.35	3.37	3.39	3.41	3.43	3.45	3.47	3.49	3.51	3.53	3.55	3.57	3.59	3.61	3.63	3.65	3.67	3.69	3.71	3.73	3.75	3.77	3.79	3.81	3.83	3.85	3.87	3.89	3.91	3.93	3.95	3.97	3.99	4.01	4.03	4.05	4.07	4.09	4.11	4.13	4.15	4.17	4.19	4.21	4.23	4.25	4.27	4.29	4.31	4.33	4.35	4.37	4.39	4.41	4.43	4.45	4.47	4.49	4.51	4.53	4.55	4.57	4.59	4.61	4.63	4.65	4.67	4.69	4.71	4.73	4.75	4.77	4.79	4.81	4.83	4.85	4.87	4.89	4.91	4.93	4.95	4.97	4.99	5.01	5.03	5.05	5.07	5.09	5.11	5.13	5.15	5.17	5.19	5.21	5.23	5.25	5.27	5.29	5.31	5.33	5.35	5.37	5.39	5.41	5.43	5.45	5.47	5.49	5.51	5.53	5.55	5.57	5.59	5.61	5.63	5.65	5.67	5.69	5.71	5.73	5.75	5.77	5.79	5.81	5.83	5.85	5.87	5.89	5.91	5.93	5.95	5.97	5.99	6.01	6.03	6.05	6.07	6.09	6.11	6.13	6.15	6.17	6.19	6.21	6.23	6.25	6.27	6.29	6.31	6.33	6.35	6.37	6.39	6.41	6.43	6.45	6.47	6.49	6.51	6.53	6.55	6.57	6.59	6.61	6.63	6.65	6.67	6.69	6.71	6.73	6.75	6.77	6.79	6.81	6.83	6.85	6.87	6.89	6.91	6.93	6.95	6.97	6.99	7.01	7.03	7.05	7.07	7.09	7.11	7.13	7.15	7.17	7.19	7.21	7.23	7.25	7.27	7.29	7.31	7.33	7.35	7.37	7.39	7.41	7.43	7.45	7.47	7.49	7.51	7.53	7.55	7.57	7.59	7.61	7.63	7.65	7.67	7.69	7.71	7.73	7.75	7.77	7.79	7.81	7.83	7.85	7.87	7.89	7.91	7.93	7.95	7.97	7.99	8.01	8.03	8.05	8.07	8.09	8.11	8.13	8.15	8.17	8.19	8.21	8.23	8.25	8.27	8.29	8.31	8.33	8.35	8.37	8.39	8.41	8.43	8.45	8.47	8.49	8.51	8.53	8.55	8.57	8.59	8.61	8.63	8.65	8.67	8.69	8.71	8.73	8.75	8.77	8.79	8.81	8.83	8.85	8.87	8.89	8.91	8.93	8.95	8.97	8.99	9.01	9.03	9.05	9.07	9.09	9.11	9.13	9.15	9.17	9.19	9.21	9.23	9.25	9.27	9.29	9.31	9.33	9.35	9.37	9.39	9.41	9.43	9.45	9.47	9.49	9.51	9.53	9.55	9.57	9.59	9.61	9.63	9.65	9.67	9.69	9.71	9.73	9.75	9.77	9.79	9.81	9.83	9.85	9.87	9.89	9.91	9.93	9.95	9.97	9.99	10.01	10.03	10.05	10.07	10.09	10.11	10.13	10.15	10.17	10.19	10.21	10.23	10.25	10.27	10.29	10.31	10.33	10.35	10.37	10.39	10.41	10.43	10.45	10.47	10.49	10.51	10.53	10.55	10.57	10.59	10.61	10.63	10.65	10.67	10.69	10.71	10.73	10.75	10.77	10.79	10.81	10.83	10.85	10.87	10.89	10.91	10.93	10.95	10.97	10.99	11.01	11.03	11.05	11.07	11.09	11.11	11.13	11.15	11.17	11.19	11.21	11.23	11.25	11.27	11.29	11.31	11.33	11.35	11.37	11.39	11.41	11.43	11.45	11.47	11.49	11.51	11.53	11.55	11.57	11.59	11.61	11.63	11.65	11.67	11.69	11.71	11.73	11.75	11.77	11.79	11.81	11.83	11.85	11.87	11.89	11.91	11.93	11.95	11.97	11.99	12.01	12.03	12.05	12.07	12.09	12.11	12.13	12.15	12.17	12.19	12.21	12.23	12.25	12.27	12.29	12.31	12.33	12.35	12.37	12.39	12.41	12.43	12.45	12.47	12.49	12.51	12.53	12.55	12.57	12.59	12.61	12.63	12.65	12.67	12.69	12.71	12.73	12.75	12.77	12.79	12.81	12.83	12.85	12.87	12.89	12.91	12.93	12.95	12.97	12.99	13.01	13.03	13.05	13.07	13.09	13.11	13.13	13.15	13.17	13.19	13.21	13.23	13.25	13.27	13.29	13.31	13.33	13.35	13.37	13.39	13.41	13.43	13.45	13.47	13.49	13.51	13.53	13.55	13.57	13.59	13.61	13.63	13.65	13.67	13.69	13.71	13.73	13.75	13.77	13.79	13.81	13.83	13.85	13.87	13.89	13.91	13.93	13.95	13.97	13.99	14.01	14.03	14.05	14.07	14.09	14.11	14.13	14.15	14.17	14.19	14.21	14.23	14.25	14.27	14.29	14.31	14.33	14.35	14.37	14.39	14.41	14.43	14.45	14.47	14.49	14.51	14.53	14.55	14.57	14.59	14.61	14.63	14.65	14.67	14.69	14.71	14.73	14.75	14.77	14.79	14.81	14.83	14.85	14.87	14.89	14.91	14.93	14.95	14.97	14.99	15.01	15.03	15.05	15.07	15.09	15.11	15.13	15.15	15.17	15.19	15.21	15.23	15.25	15.27	15.29	15.31	15.33	15.35	15.37	15.39	15.41	15.43	15.45	15.47	15.49	15.51	15.53	15.55	15.57	15.59	15.61	15.63	15.65	15.67	15.69	15.71	15.73	15.75	15.77	15.79	15.81	15.83	15.85	15.87	15.89	15.91	15.93	15.95	15.97	15.99	16.01	16.03	16.05	16.07	16.09	16.11	16.13	16.15	16.17	16.19	16.21	16.23	16.25	16.27	16.29	16.31	16.33	16.35	16.37	16.39	16.41	16.43	16.45	16.47	16.49	16.51	16.53	16.55	16.57	16.59	16.61	16.63	16.65	16.67	16.69	16.71	16.73	16.75	16.77	16.79	16.81	16.83	16.85	16.87	16.89	16.91	16.93	16.95	16.97	16.99	17.01	17.03	17.05	17.07	17.09	17.11	17.13	17.15	17.17	17.19	17.21	17.23	17.25	17.27	17.29	17.31	17.33	17.35	17.37	17.39	17.41	17.43	17.45	17.47	17.49	17.51	17.53	17.55	17.57	17.59	17.61	17.63	17.65	17.67	17.69	17.71	17.73	17.75	17.77	17.79	17.81	17.83	17.85	17.87	17.89	17.91	17.93	17.95	17.97	17.99	18.01	18.03	18.05	18.07	18.09	18.11	18.13	18.15	18.17	18.19	18.21	18.23	18.25	18.27	18.29	18.31	18.33	18.35	18.37	18.39	18.41	18.43	18.45	18.47	18.49	18.51	18.53	18.55	18.57	18.59	18.61	18.63	18.65	18.67	18.69	18.71	18.73	18.75	18.77	18.79	18.81	18.83	18.85	18.87	18.89	18.91	18.93	18.95	18.97	18.99	19.01	19.03	19.05	19.07	19.09	19.11	19.13	19.15	19.17	19.19	19.21	19.23	19.25	19.27	19.29	19.31	19.33	19.35	19.37	19.39	19.41	19.43	19.45	19.47	19.49	19.51	19.53	19.55	19.57	19.59	19.61	19.63	19.65	19.67	19.69	19.71	19.73	19.75	19.77	19.79	19.81	19.83	19.85	19.87	19.89	19.91	19.93	19.95	19.97	19.99	20.01	20.03	20.05	20.07	20.09	20.11	20.13	20.15	20.17	20.19	20.21	20.23	20.25	20.27	20.29	20.31	20.33	20.35	20.37	20.39	20.41	20.43	20.45	20.47	20.49	20.51	20.53	20.55	20.57	20.59	20.61	20.63	20.65	20.67	20.69	20.71	20.73	20.75	20.77	20.79	20.81	20.83	20.85	20.87	20.89	20.91	20.93	20.95	20.97	20.99	21.01	21.03	21.05	21.07	21.09	21.11	21.13	21.15	21.17	21.19	21.21	21.23	21.25	21.27	21.29	21.31	21.33	21.35	21.37	21.39	21.41	21.43	21.45	21.47	21.49	21.51	21.53	21.55	21.57	21.59	21.61	21.63	21.65	21.67	21.69	21.71	21.73	21.75	21.77	21.79	21.81	21.83	21.85	21.87	21.89	21.91	21.93	21.95	21.97	21.99	22.01	22.03	22.05	22.07	22.09	22.11	22.13	22.15	22.17	22.19	22.21	22.23	22.25	22.27	22.29	22.31	22.33	22.35	22.37	22.39	22.41	22.43	22.45	22.47	22.49	22.51	22.53	22.55	22.57	22.59	22.61	22.63	22.65	22.67	22.69	22.71	22.73	22.75	22.77	22.79	22.81	22.83	22.85	22.87	22.89	22.91	22.93	22.95	22.97	22.99	23.01	23.03	23.05	23.07	23.09	23.11	23.13	23.15	23.17	23.19	23.21	23.23	23.25	23.27	23.29	23.31	23.33	23.35	23.37	23.39	23.41	23.43	23.45	23.47	23.49	23.51	23.53	23.55	23.57	23.59	23.61	23.63	23.65	23.67	23.69	23.71	23.73	23.75	23.77	23.79	23.81	23.83	23.85	23.87	23.89	23.91	23.93	23.95	23.97	23.99	24.01	24.03	24.05	24.07	24.09	24.11	24.13	24.15	24.17	24.19	24.21	24.23	24.25	24.27	24.29	24.31	24.33	24.35	24.37	24.39	24.41	24.43	24.45	24.47	24.49	24.51	24.53	24.55	24.57	24.59	24.61	24.63	24.65	24.

## REFRIGERATION AND COLD STORAGE . . . . .

22  
3



In the field of domestic and commercial low temperature refrigeration units, it is essential for efficient operation that unnecessary heat be eliminated.

The most satisfactory and efficient method is to insulate with B.I. Refrigeration Batt or B.I. Refrigeration Block. These Batts and Blocks are made from selected long-fibre slagwool, bonded and cut to fit immediately into the units during construction. It is sometimes desirable to wrap these Batts to seal against air penetration.

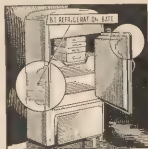
A most convenient form of purchase is to group several sized Batts into a set. A set then constitutes the exact number and size of Batts to completely insulate a single unit. No skilled labour is required to install this.

These sets, packed in cartons, are ready for installation immediately.

The household ice box depends upon a single block of ice for its refrigeration effect. To assist in the preservation of the ice block, it is isolated in a separate compartment at the top of the box so that opening of the door does not allow warm, external air to pass directly over the ice. Warm air from the lower region of the box, in rising, passes over the ice, becomes cooler, and falls again to the lower region, thus completing the cycle.

To keep the ice consumption at a minimum, it is imperative to retard the inflow of heat through the ice box walls.

B.I. Refrigeration Batt, wrapped in moisture-proof paper, can be made in any desired size for this purpose.

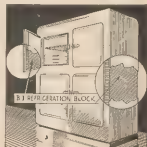


The efficient low running cost of the domestic refrigeration can only be achieved by minimising the work it has to perform. Unnecessary heat can be prevented from entering the refrigeration by completely insulating the unit with B.I. Refrigeration Batts cut to fit directly into the walls, top bottom and door of the unit. These Batts should be either sealed into the wall cavity by the structure of the unit, or by using a wrapped B.I. Refrigeration Batt the necessity of further sealing is eliminated.

B.I. Refrigeration Batts, wrapped or unwrapped, are recommended for this purpose.

B.I. SLAG CORK is recommended as the insulating material for use in display and storage counters. Its rigidity, low "K" factor, ease of cutting and installation, render it admirably suitable. It is highly resistant to moisture absorption and is well suited for the insulating material should be put down in the future.

The recommended insulation for a commercial type refrigerator is the B.I. Refrigeration Block. This is a block of slightly heavier bond and rigidity than the Batts. It is treated for the non absorption of moisture so that its insulating value is not impeded. This Block can be supplied in sets of any size and thickness, wrapped or unwrapped.





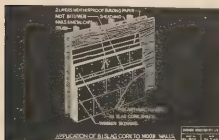
It is not possible to find a single value for  $\alpha$  that is consistent with all the data.

1.  $\text{NaOH}$  and  $\text{H}_2\text{O}$  are not involved in the reaction.
2.  $\text{H}_2\text{O}$  is not involved in the reaction.

The following is a list of the materials used in the construction of the model. The materials are listed in the order in which they are used in the construction of the model. The materials are listed in the order in which they are used in the construction of the model.

Figure 12.14 is applied to the 6- or 8- and column, and is similar to the earlier answers. Table 12.14 lists the answers. See 12.15 and 12.16 for a comparison of the results. The top layer

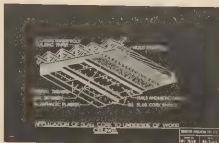
31 Stag Cork



• wall surface should be brushed free of all dirt, dust loose  
• & etc, any unevenness filled and smoothed out to a clean  
• surface with cement plaster

here must be 100% contact between this surface and the B.I. Slag Cork. To the completely smooth and dry surface a heavy continuous coat of hot bitumen should be applied. The next layer of Slag Cork is applied to this surface as hot bitumen after a bitumen coat has been brushed on to the first layer. Wooden sheaves are then used to secure the second layer to the first.

Let  $\mathbf{A} = (a_{ij})$  be an  $n \times n$  matrix with  $a_{ij} \in \mathbb{R}$  and  $a_{ii} = 0$  for all  $i$ . Then  $\mathbf{A}$  is called a *matrix with zero diagonal*. Let  $\mathbf{B} = (b_{ij})$  be an  $n \times n$  matrix with  $b_{ij} \in \mathbb{R}$  and  $b_{ii} = 1$  for all  $i$ . Then  $\mathbf{B}$  is called a *matrix with ones on the diagonal*. Let  $\mathbf{C} = (c_{ij})$  be an  $n \times n$  matrix with  $c_{ij} \in \mathbb{R}$  and  $c_{ii} = 0$  for all  $i$ . Then  $\mathbf{C}$  is called a *matrix with zero diagonal and ones on the diagonal*.

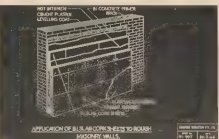


†  $\Delta H$  in kcal/g.  $\Delta S^\circ$  in eu.  $\Delta G^\circ$  in kcal/g.  $\Delta G^\circ$  for a 10% water conc. binding point.  $\Delta G^\circ$  for a 10% conc. binding point.  $\Delta G^\circ$  for a 10% conc. binding point.

The first layer of B.I. Sling Cork is applied in the same manner and fastened with the same nails as prior to wood coating application. A second layer is then applied to the face of the first layer by applying the second layer. This is then additionally secured by wooden skewers in addition to hot bitumen.

That  $\gamma$  is fixed and staggered first and second layer joints are essential.

A continuous bitumen vapor barrier is applied to the exposed face of the last layer of **Slag Cork**, and this may be followed by a

[illegible]

placed immediately over the wood floor, followed by hot bounces and then the B.I. Slag Cork installed as above.

After the waterproofing is fully cured, such as the sludge pits, two layers waterproof building paper should be laid over the other bitumen seal before pouring the wearing floor.

**B.I. SLAG CORK** is a superior low temperature insulating material processed from Slagwool, incorporating a waterproof binder. In Slag Cork, we offer a material which embraces all the salient features of a proved and thoroughly successful low temperature insulation.

B.I. Slag Cork has the following qualities which enable it to be so admirably suited to low temperature work.

- (a) It retains its low thermal conductivity at low service temperature.
- (b) Odorless and incapable of absorption and retention of odors.
- (c) Fire-proof, rot-proof, stable, chemically inert, and will not support growth of moulds or bacteria.
- (d) Structural strength permits handling and erection without breakage.
- (e) Ease of thorough and complete sealing against penetration of air.
- (f) Non-absorption of moisture.

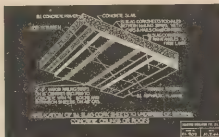
Its recommended use is for all low temperature work, including refrigeration, cold storage rooms, ice cream storage, ice storage, meat storage, mobile refrigeration, etc.

The thermal conductivity of B.I. Slag Cork under low temperature service conditions is 0.33 B.T.U. per sq. ft. per hour per 1 in. thickness per °F. temperature difference.

B.I. Slag Cork is manufactured in standard sizes 3 ft. x 1 ft. in thickness of 2 in. x 3 in.

### SLAG CORK THICKNESSES RECOMMENDED

Temperature range °F.	Thickness
35 to 45	3 in. in 1 layer
20 " 35	4 " " 2 layers
5 " 20	5 " " 2 "
5 " +5	6 " " 2 "
-40 " -5	8 " " 3 "



If the circumstances allow, it is preferable to erect the first layer of B.I. Slag Cork and temporarily support it, subsequently pouring the concrete ceiling on top of this layer. This method gives satisfaction and permanency.

10 gauge cap and wires, four per sheet, are inserted in each sheet and anchored in the poured concrete ceiling.

To the upper side of this first layer of B.I. Slag Cork, a suitable bitumen vapor barrier is applied, the ceiling is then poured and allowed to set. The second layer is applied to the first layer with hot bitumen and wooden skewers. Joints are staggered.

A vapor barrier is applied over the external face, and this may be followed by any suitable finish.

### CONCRETE CEILINGS

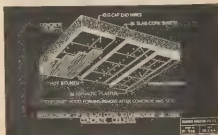
#### TWO LAYERS OF SLAG CORK—BOTH LAYERS APPLIED IN HOT BITUMEN

The concrete ceiling shall first be prepared, cleared of all dirt, dust, loose mortar, etc. Wooden nailing strips, 2 in. wide and spaced 12 in. apart by the thickness of the first layer of Slag Cork, shall be fixed to the under side of the concrete ceiling and suitably anchored.

Both concrete and nailing strips shall then be given one good coat of hot bitumen. When dry, the first layer of Slag Cork shall be applied directly against the concrete in hot bitumen, tightly butted between nailing strips and toenailed to same with special flat head galvanized wire nails.

A second layer of Slag Cork shall be applied to the first layer also in hot bitumen, and additionally secured to the first by wooden skewers, 2 in. x 3 in. x 12 in. spaced 12 in. apart by the height of the second layer.

A vapor barrier is applied over the exposed surface of Slag Cork, followed by a suitable finish.



# BRADFORD INSULATION PTY. LTD., manufacturers of B.I. SLAG CORK

THE MAJOR REQUIREMENTS of permanent and economic low temperature insulation are:—

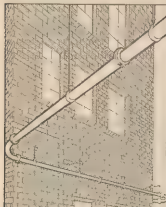
- A high-grade—low-cost insulating material.
- Thorough sealing against moisture penetration.
- Protection from mechanical damage.

B.I. Slag Cork fully satisfies this first requirement.

The absence of any form of air pipe insulation construction following moisture penetration is the principal cause of failure from rusting. The only exception of course is by B.I. Slag Cork, as the permanency of the structure, which is of a solid type, and provides a suitable surface for the application of an efficient and waterproof seal.

The insulation must be continuous and must completely surround the space. All beams, girders, columns, joists, studs, etc., must be insulated.

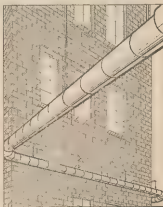
The insulating material should be completely enclosed in a moisture-proof envelope. Bitumen, applied hot, is the recommended envelope for this purpose. The inner and outer moisture-proof seal must be continuous, so no puncture should be left that will permit the entry of moisture-laden air into the insulating material. Protection from mechanical damage may be ensured by a finish of thoroughly waterproofed cement rendering, reinforced by galvanised wire netting fastened to the wooden skewers. Various cement water proofing agents are available; those which increase the adhesion and elasticity of the finish are recommended. This finish may be painted if desired.



HEAT LOSS COMPARISON  
between BARE PIPE and  
PIPE INSULATED with  
B.I. SLAG CORK

**BARE PIPE**  
10 ft. of 3 in. diam. bare pipe  
carrying a refrigerant at 0°F. will  
lose heat equivalent to 1,320 lbs.  
coal yearly.

**B.I. SLAG CORK  
INSULATED PIPE**  
The same pipe, insulated with 2  
in. B.I. SLAG CORK, will save  
1,320 lbs. of this coal each year.



## HEAT TRANSMISSION RATES FOR B.I. SLAG CORK

The body of the table shows rates of heat transmission in B.T.U. per hour per °F. temp. diff. per lineal ft. of low temperature pipe insulated with varying thicknesses B.I. SLAG CORK

Nominal Pipe (Diam., Inches)	Surface Area of Pipe (sq. ft. per lin. ft.)	THICKNESS OF B.I. SLAG CORK									
		1 in.	1 1/2 in.	2 in.	2 1/2 in.	3 in.	3 1/2 in.	4 in.	5 in.	6 in.	
1	0.250	0.141	0.117	0.103	0.094	0.086	0.079	0.072	0.062	0.044	
2	0.295	0.128	0.102	0.087	0.078	0.070	0.063	0.056	0.047	0.035	
3	0.344	0.108	0.084	0.072	0.064	0.057	0.050	0.043	0.036	0.027	
4	0.400	0.089	0.068	0.058	0.051	0.045	0.039	0.033	0.027	0.020	
5	0.460	0.074	0.056	0.047	0.041	0.036	0.031	0.026	0.021	0.016	
6	0.520	0.062	0.046	0.039	0.034	0.030	0.025	0.021	0.017	0.013	
7	0.580	0.053	0.039	0.033	0.029	0.025	0.021	0.018	0.014	0.011	
8	0.640	0.046	0.033	0.028	0.024	0.021	0.018	0.015	0.012	0.009	
9	0.700	0.040	0.029	0.024	0.021	0.018	0.015	0.013	0.010	0.008	
10	0.760	0.035	0.025	0.021	0.018	0.015	0.013	0.011	0.009	0.007	
11	0.820	0.031	0.022	0.019	0.016	0.014	0.012	0.010	0.008	0.006	
12	0.880	0.028	0.020	0.017	0.015	0.013	0.011	0.009	0.007	0.005	

**GENERAL SPECIFICATION SECTIONAL B.I. SLAG CORK  
LOW TEMPERATURE INSULATION  
FOR PIPE LINES**

INSULATING MATERIAL . . . . . SECTIONAL B.I. SLAG CORK  
DENSITY . . . . . 14 lbs. per cubic ft.  
THERMAL CONDUCTIVITY . . . . . 0.33 B.T.U./sq. ft./hour/1 in./°F.  
THICKNESS OF INSULATION . . . . . as required  
SEALING AND WATERPROOFING MATERIALS:

B.I. ASPHALTIC PLASTER is manufactured in three grades—  
No. 1 . . . . . brushing consistency  
No. 2 . . . . . mopping consistency  
No. 3 . . . . . trowelling consistency.

B.I. Asphaltic Plaster has a bitumen cement base, possessing a tremendous amount of elasticity, and will not crack under service conditions on weathering. All grades are waterproof. B.I. WATERPROOF SEALING MEMBRANE is a bitumen impregnated paper used in conjunction with B.I. No. 1 Asphaltic Plaster, to all B.I. Slag Cork joints.

FABRIC Standard duck used on all sections of B.I. Slag Cork.

**PREPARATION OF PIPE LINES**

After the lines have been tested tight and dry by other B.I. field staff, the lines are cleaned and all rust scale and other foreign matter is removed. All pipes will be given one coat of B.I. No. 1 Asphaltic Plaster to serve as an primer coat.

**APPLICATION OF SECTIONAL B.I. SLAG CORK**

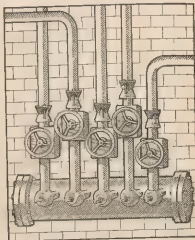
Each 3 ft. section of B.I. Slag Cork is applied independently and must be applied in strict order of the B.I. Slag Cork Manual. All insulating seams are located at top and bottom of the pipe line, and the sections of B.I. Slag Cork are drawn up tightly with a soft back wire or equivalent strapping at approximately 6 in. pitch.

**WEATHERSEAL**

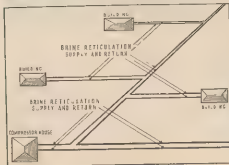
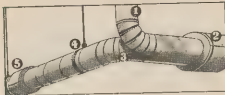
B.I. No. 2 Asphaltic Plaster is applied and smoothed to a thickness of 1 in. to 1 1/2 in. over the B.I. Slag Cork. This is allowed to almost dry, when standard duck is pulled tightly over the No. 2 Plaster and lapped at least 5 in. with No. 1 Plaster. The duck is then given two coats of B.I. No. 1 Asphaltic Plaster.

**VALVES AND FITTINGS, ETC.**

All valves and fittings, etc., can, if necessary, be insulated in such manner that this insulation can be removed for maintenance purposes without disturbing the neighbouring insulation.



1. Pipework insulated with pre-formed Slag Cork, cemented to pipes and outside coated with Asphaltic Plaster. Finished with sheet metal covers.
2. Removable flange boxes for routine inspection of pipe joints.
3. Developed segmented bends in cover and Slag Cork.
4. Metal covers secured with specially selected strapping, thus eliminating cover screws which would place the inside on Straps also provide attachment for supporting hangers.
5. Shows a removable flange box along the line associated with cover wrap and supporting hanger.



**LARGEST BRINE RETICULATION  
IN AUSTRALIA**

6,000 ft. Pipe. Brine at 12° F.

The B.I. SLAG CORK insulation on these pipes was designed to have a heat loss of not more than 0.11 B.T.U. per 3 in. thickness

Actual heat loss under test load was 0.085 B.T.U./sq. ft.

B.I. SLAG CORK was used exclusively on this pipe.

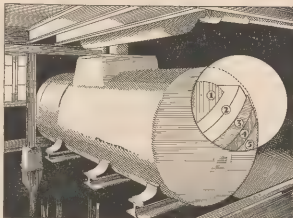
# **LOW TEMPERATURE STORAGE TANK for CHLORINE**

OPERATING TEMPERATURE -40°C.

Owing to the corrosive nature of Chlorine, regular inspection of the welded joints is essential.

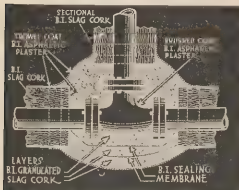
This is a removable inspection plug developed for this purpose. It is easily removed while still providing a perfect surrounding seal.

1. B.I. Bitumastic Plaster
2. Two 3 in. layers B.I. Slag Cork
3. B.I. Sealing Membrane
4. Staggered joints of first and end layer 8 in steel strapping
5. B.I. Bituminous Paint I.C. (inner seal)



**22**  
**3**

Typical insulated fitting with B.I. Slag Cork. The insulation covering on the fitting itself is completely removable for maintenance without disturbing the sealed ends of sectional cover.



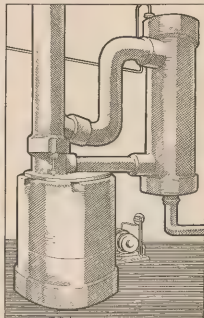
Reaction vessels for chemical processes accurate low temperatures must be maintained within narrow limits.

Insulation must be non-reactive with any process chemicals.

All inlet and outlet pipes must also be insulated against heat absorption.

B.I. Slag Cork is ideally suited to this purpose.

## **B.I. SLAG CORK for LOW TEMPERATURE INSULATION**



# SOUND CONTROL

by Picton Hopkins & Son Pty. Ltd.

22

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Proper acoustical treatment is now regarded as essential. Management has proved that efficiency and output increases in direct ratio to the comfort of working conditions and surroundings. "Silenceil" acoustic units are designed to provide maximum efficiency for all classes of Sound Control and Noise Reduction.

"Silenceil" acoustic units are fire-resistant, easily decorated and have a pleasing appearance with maximum light reflection; they may be easily decorated to match adjoining plaster surfaces. Units consist of rigid perforated plaster panels 26 in. square and 1½ in. thick reinforced on all edges for maximum rigidity.

Backed with fine cheesecloth and a thick mineral wool absorbent blanket, "Silenceil" has an absorption value of 90 per cent under certain conditions. For practical application, 75 co-efficient of absorption is claimed and has proved satisfactory. "Silenceil" units are applied to battens spaced at 26 in. centres and packed down to a true level plane. Sixteen gauge 2 in. galvanized clouts are used to attach units to battens, joints between units are flush stopped with neat plaster.

On the right, the ceilings of the State Insurance Office, Collins Street, Melbourne, illustrate clearly how well "Silenceil" blends with adjoining decorative plaster cornices while retaining an efficient sanitary appearance.

Below we illustrate a photographic section of a "Silenceil" acoustic unit showing its application to battens as well as its structure.



## PICTON HOPKINS & SON PTY. LTD.

130 CHURCH STREET, RICHMOND, VICTORIA

Telephone: JA.2160 (2 lines)

171 MURRAY STREET, HOBART, TASMANIA

Telephone: 3241

RANSAY & CATALOGUE

# INSULWOOL



FOR  
EFFECTIVE  
INSULATION  
IN HOMES  
AND  
COMMERCIAL  
BUILDINGS

## THE ADVANTAGES OF

# INSULWOOL INSULATION

22

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**YEAR ROUND COMFORT** is secured, for properly insulated homes, shops, offices and factories can be up to 15 deg. cooler than outside temperatures in the summer, whilst in the winter, cold draughts are eliminated and more uniform inside temperatures result. With insulation and proper ventilation, it is possible in summer to keep your home at or near night temperature, which is nearly always below shade temperature.

In Winter, cold walls and ceilings cause a sensation of bodily cold by drawing off body heat. INSULWOOL in walls and on ceilings, like a woolly blanket on a bed, retains heat within the house, automatically providing greater personal comfort for the occupants.

In Summer, INSULWOOL makes just as great a contribution to comfort by preventing outdoor heat from penetrating into the house through walls and ceilings. Their surface temperatures are kept lower and consequently the house is cooler and far more comfortable.

**ECONOMY IN FUEL BILLS** is assured, for INSULWOOL insulation properly installed quickly pays for itself. Research has revealed a saving of up to 40 per cent. in cost of heating or cooling.

**MORE HEALTHFUL SURROUNDINGS** are secured by the elimination of draughts caused by uneven room temperatures such as are present in uninsulated houses.

## INSULWOOL HAS PROVED THE BEST INSULATION

INSULWOOL is the perfect insulation, consisting of a mass of gossamer fine filaments blasted from molten rock by high pressure steam jets. These fibres entrap millions of tiny air cells that form over 90 per cent. of the mass of the material. Many exclusive processes are used in the manufacture of INSULWOOL, which is outstanding because of the following features:—

**LOW THERMAL CONDUCTIVITY.**—The Thermal Coefficient of INSULWOOL is equal to, or better than, that of any other insulation commonly used. See individual product data for details of co-efficients.

**FIRE RESISTANCE.**—INSULWOOL cannot burn, and it therefore protects buildings insulated with it from fire.

**MOISTURE RESISTANCE.**—INSULWOOL is non-hygroscopic and is so treated by exclusive processes that it does not absorb moisture. This is of great importance, since insulating materials that absorb water are not efficient. Water is a good conductor of heat, and for this reason alone, it is necessary for insulation to be moisture proof.

**REDUCTION IN FIRE RISK** is definite, for the use of INSULWOOL in the walls and ceilings greatly lessens the possibility of the building catching fire. Furthermore, INSULWOOL will prevent the passage of flame through the walls because the origin of the material used is rock.

**REDUCTION IN BUILDING COSTS.** This is particularly important. Flat or low-pitched roofs and lower ceilings, with consequent timber savings, are possible because of the use of insulation. Prefabrication becomes practicable.

**A HIGHER RESALE VALUE FOR YOUR PROPERTY** is certain, for prospective purchasers will readily realise the many advantages of insulation.

**QUIETER SURROUNDINGS** are assured, for INSULWOOL reduces sound transmission just as it stops heat.

**REDUCTION IN DECORATING BILLS.** In uninsulated buildings, moisture from cooking, bathing, etc., condenses on cold surfaces and causes discoloration, etc. INSULWOOL keeps the surfaces warm, prevents sweating and consequent discoloration.

Under Australian climatic conditions, the most satisfactory type of building construction is the frame type with insulated walls and ceiling.

An insulated frame type house is cheaper to build and more comfortable at all seasons of the year than solid brick construction.

**PHYSICAL AND CHEMICAL STABILITY.**—INSULWOOL is chemically inert and free from shrinkage or expansion with varying temperature or moisture conditions, and will not break down under vibration if properly installed. INSULWOOL will not produce corrosive action on metals.

**LIGHTNESS AND RESILIENCE.**—INSULWOOL in all forms, and in particular, hats, is light and resilient.

**VERMIN PROOF AND ODOURLESS.** Because of its rock origin, INSULWOOL is odourless and will not harbour or attract vermin.

**EASINESS OF INSTALLATION.** INSULWOOL in solution is amazingly easy to install.

**LASTING PROTECTION.**—INSULWOOL, like the rock from which it is made, is indestructible, once installed, it offers permanent insulation for the life of the building, because it will not corrode or deteriorate.

**ECONOMICAL.** INSULWOOL compares favourably with any other insulating material on the market for its performance, coverage and cost.



# INSULWOOL PRODUCTS.



22  
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**INSULWOOL No. 2 Batt** is the recommended type of insulation for use in walls and ceilings of factory, office or residential buildings, because of its light weight, low thermal conductivity, and because its thickness is assured. It is a resilient, springy, moisture-proof batt, easy to handle and can be cut to shape with a knife. Designed to fit snugly between studs at 16 in. centres, it does not settle or move with age or vibration for the life of the building. Thermal conductivity is .26. Its average density is 5 lbs. per cubic foot. Standard size is 24 in. x 16 1/2 in., and it is made in thicknesses of 2 in., 3 in. and over.

**INSULWOOL Blanket** is a highly efficient insulation engineered for permanence and designed for use in walls, ceilings and floors. The core of the Blanket consists of a well felted layer of moisture-proofed INSULWOOL fibres similar to INSULWOOL No. 2 Batt, sealed between two layers of specially selected paper with wide flanges to permit easy fixing to ceiling and floor joists, wall studs, etc., as required.

INSULWOOL Blankets are manufactured to fit snugly between studs, etc., spaced at 16 in. centres, and in lengths convenient to handle and install. The Blanket is easily cut to fit between studs spaced closer together than standard spacing. It is made in thicknesses of 1 in. and 2 in., and has a thermal conductivity of .26.

**Granulated No. 2** is buff-colored INSULWOOL in small granules about 3/8 in.-1 in. in diameter. Available for use where pneumatic installations are proposed. Thermal conductivity is .33.

**Loose INSULWOOL No. 2** is INSULWOOL in a loose fluffy form. It is easy to handle and install and is thoroughly efficient. It is widely used for insulation of ovens, stoves and industrial equipment of all kinds. In building insulation, Loose INSULWOOL is often used for filling odd-shaped spaces.

**INSULWOOL Zerobatt** is similar in appearance to INSULWOOL Zeroblock. It is ideal for use where temperatures have to be maintained above 32 deg. F., and its low density is important where shipping weight is a factor. Thermal conductivity at Mean Temperature of

50 deg. F. is .22 B.T.U. per hr. sq. ft./1 in. thickness 1 deg. F.

100 deg. F. is .25 B.T.U. per hr. sq. ft./1 in. thickness 1 deg. F.  
Standard Thicknesses: 2 in., 3 in., and 4 in.

**INSULWOOL Zeroblock** takes on big jobs! It has been specially designed for the efficient insulation of cool stores, ice works, freezing chambers, large refrigerator cabinets, refrigerated ships, etc. It is a semi-rigid yet resilient block of INSULWOOL fibres, brownish in colour, and may be fixed to any surface, preferably between wooden nailing strips or with bitumen. For details of recommended fixing procedure in various types of construction, our engineers or agents should be consulted. The fireproof qualities of Zeroblock are especially valuable in cool store and ship insulation work. INSULWOOL Zeroblock may also be used with very great success for the insulation of industrial equipment operating at temperatures up to 700 deg. Fahr.

Thermal Conductivity at Mean Temperature of

50 deg. F. is .23 B.T.U. per hr. sq. ft. 1 in. thickness 1 deg. F.

100 deg. F. is .25 B.T.U. per hr. sq. ft. 1 in. thickness 1 deg. F.

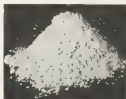
Average Density: 9 lbs. per cubic foot.

Standard Size: 24 in. x 16 1/2 in. and 24 in. x 12 in.

Standard Thickness: 1 in., 2 in., 3 in. and 4 in.



INSULWOOL No. 2 Batts are supplied 16 1/2 in. wide to ensure a snug push fit between rafters, joists, studs, etc., spaced at 16 in. centres.



Granulated INSULWOOL is ideal for insulating existing spaces because it can be pneumatically blown into the cavities of walls and on top of ceilings of existing buildings.

Easy fixing and maximum insulation are the main features of INSULWOOL Blanket shown being nailed in the illustration below.



## HOW AND WHERE TO INSTALL INSULWOOL INSULATION

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**ADAPTABILITY.** Being available in batt, blanket, granulated and loose forms, INSULWOOL insulation can be used for all classes of buildings and all types of construction to provide maximum protection against outside weather conditions.

**LOCATION OF INSULATION.**—Primary point of treatment in any building should be the ceiling, as this is usually the principal transmitter of heat. In solid brick, stone or concrete houses, INSULWOOL over the ceilings will give the desired effect, but it should be extended to the walls in brick veneer, timber or steel frame houses, where it is equally essential. In building the latter types of house, where the budget is restricted, it is advisable to concentrate on the wall insulation, as it will be simpler to complete the ceilings at a later date.

It has been proved that a brick veneer home with insulated walls and ceilings will be more comfortable in summer and winter than a solid brick house—and it costs less to build.

Insulation of top-floor ceilings of two-storey houses will keep them almost as cool as downstairs in hot weather and help to make the whole house warmer in winter. Flat, low pitched and skillion type roofs need special attention and thicker insulation than roofs of average design.

Insulation round food cupboards in framed houses will prove a boon in keeping food cool in hot weather.

The use of vapour barriers, consisting of waterproof building paper located on wall studs and ceiling joists, is necessary under certain conditions, but such conditions are not usual in Australian homes. Conditions where vapour barriers are necessary are as follows:

- If rooms contain high relative humidity.
- If resin bonded plywood or T&T sheets are used on the outside of the house.
- If building paper is used under weatherboards, fibre cement, etc.

**CEILING INSULATION.**—All types of construction require at least 2 in. thickness of INSULWOOL for both summer and winter conditions, and, naturally, 3 in. or 4 in. will give a further improvement. Low pitched and iron roofs require a 3 in. minimum thickness of INSULWOOL, while flat roofs call for at least 4 in. in thickness.

**WALL INSULATION.**—Walls of brick veneer homes can be effectively insulated with 2 in. of INSULWOOL and, whilst 2 in. of insulation is the minimum thickness of insulation that should be used for walls of timber homes, it is known that 3 in. of insulation is more effective in such cases, particularly for summer comfort.

**ROOF VENTILATION.**—Adequate roof ventilation will considerably improve the effectiveness of ceiling insulation. It is recommended that at least 12 square inches of ventilation be provided for every 100 square feet of ceiling area. With normal tile roof construction, a certain amount of ventilation is obtained from the cracks between the tiles, but it may be desirable to provide additional ventilation by means of louvres in gable ends or ventilation in box eaves. If, in the case of iron, slate and asbestos cement roofs, suitable louver ventilation cannot be provided, a ventilating ridge should be installed to permit warm air to escape in summer.

### SCHEDULE OF PRODUCTS AND PACKAGING

Style	Standard Sizes	Standard Thicknesses	Standard Packages	Average Density
INSULWOOL No. 2 BATT	4ft. x 16ft.	2in. 3in. 4in.	Corrugated Cardboard, 4' x 8' or 4' x 12'	5 lbs. cubic foot
INSULWOOL ZEROBATT	4ft. x 16ft.	2in. 3in. 4in.	(as above)	5 lbs. cubic foot
INSULWOOL ZEROBLOCK	4ft. x 16ft.	2in. 3in. 4in.	(as above)	5 lbs. cubic foot
INSULWOOL BLANKET	8ft. long x 16ft.	1in. 2in. 3in.	70 lb. bags	5 lbs. cubic foot
LOOSE INSULWOOL No. 2			20 lbs. per cubic foot, depending on weight of installation	5 lbs. cubic foot
GRANULATED INSULWOOL No. 2			55 lb. bags	10 lbs. cubic foot

Special Sizes and Thicknesses: INSULWOOL, No. 2, ZeroBatt and ZeroBlock can all be supplied in special sizes and thicknesses to order where large quantities are required.

## INSULWOOL PRODUCTS PTY. LTD.

20 Queen Street, Melbourne, Victoria Phone MU7064  
Lisgar House, Carrington Street, Sydney, N.S.W. Phone BW4683  
Boundary Street, Brisbane, Queensland Phone B3806

### Agents:

A. U. Webb The Roofcote Co. 91 Grenfell Street, Adelaide, South Aust. Phone Cent 5164  
Horsburgh Bros. 870 Murray Street, Perth, West Australia Phone B 3534  
C. J. Renzie, Lampton Avenue, Devereux Park, Hobart. Phone Glenorchy 374.  
Down on Sales Corporation Ltd., Auckland Wellington, Christchurch and Dunedin, N.Z.

PERFOTILE

PERFOTILE

PERFOTILE

SOUND  
*Control*



# NOISE

## AND WHAT IT DOES

In almost every building, wherever men, women and children live, work, and play, we have noise; noise that irritates and distracts, sabotaging our every activity. A single word typed by a stenographer, the jangle of a telephone, the rattle of china in a restaurant, unleashes noise that bounces from one hard non-absorbing surface to another to annoy the nerves of humans, affecting their efficiency both physically and mentally. The quiet surroundings so essential for hospital patients, good hearing in theatres, comfort and quiet in restaurants, can only be obtained by providing adequate areas of noise absorbing materials.

The efficiency of an office or factory worker drops rapidly after being subjected to a few hours of jangling telephones, clattering typewriters or the continual hum of power-driven machines. Needless or excessive noise in factories causes frayed nerves, lowers output and generally lowers the faculties of the worker for concentration and judgment.

As a sponge absorbs water, so noise can be trapped and absorbed with correctly located noise absorbing materials like Perfolite, Perfolpy and Perfosteel. Backed with spongy fibrous Insulwool, one of the most effective sound absorbing materials known to man, these highly efficient products absorb noise through hundreds of symmetrically placed holes in their exposed surfaces.



Banking Chamber,  
E.S. & A. Bank,  
Royal Bank Branch, Melbourne  
Stephenson & Turner, Architects

### SCIENTIFIC FACTS

Dr. Donald A. Laidl, Director of the Psychological Laboratory of Colgate University, U.S.A., says: "Many executives think that noise is negligible, that nothing can be done to lessen it, and that anyway it does not matter. All three ideas are wrong. Noise cuts into dividends by lessening output and requiring more energy from workers. There is no evidence that workers get used to noise. They become unconscious of its presence, but the effect upon their output remains."

# MATERIALS FOR SOUND CONTROL

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The knowledge gained by Insulwool Products Technical Staff in the application of an extensive range of sound control products for noise reduction in offices, factories, hospitals, dining rooms, bar rooms, broadcasting studios, theatres, engine test rooms and a host of other applications, is yours for the asking. Ring the nearest Insulwool Office now, and have a technical expert discuss your sound control problem.

The secret of sound control is the provision of absorbent materials adjacent to the source of noise. Such materials, as well as absorbing noise, must harmonise with the architectural treatment of the buildings in which they are used. Perfotile, Perfofly and Perfosteel have been designed to meet all the requirements of sound control in the wide range of buildings where such control is needed.

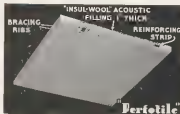
## PERFOTILE

Perfotile is a unique sound absorbing material designed for maximum efficiency over a wide range of sound frequencies. Manufactured from Fibrous Plastic and Insulwool, the perfect sound absorbing material, Perfotile may be easily decorated to blend perfectly with ceilings and corridors commonly found in all types of buildings today; its natural surface has a high light reflecting factor, is easily cleaned and is pleasing to the eye. Perfotile is available in 24 in. x 24 in. units, 1½ in. thick, in two types, that are easily and quickly applied over all new and old surfaces in the form of complete ceilings or panels strategically located over areas of intense noise to conform with the architectural treatment.

Being backed with Insulwool, Perfotile has a high insulation value that promotes comfortable year-round temperatures. Low in first cost, Perfotile fits well within building budgets, and wherever quiet means profit it soon pays for itself.

**SOUND ABSORPTION EFFICIENCY**  
Tests by R. O. Cherry, M.Sc., F.Inst.P., A.M.I.E. (Aust.), A.M.I.R.E., show the following results:

Frequency in Cycles per sec. . .	256	512	1024	2048
Sound Absorption Efficiency . .	76%	96%	88%	70%



## PERFOFLY

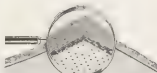
Perfofly is a combination of perforated specially selected bond-wood backed by the requisite thickness of Insulwool (up to 6 in. of Insulwool can be used with Perfofly) to provide the same range of sound absorption efficiency as Perfotile.

Available in large 6 ft. x 3 ft. sheets, Perfofly is easily installed by nailing to battens spaced at 12 in. centres; it is ideal for use in all types of prefabricated structures where acoustical correction is required, or where large wall areas are to be acoustically treated.

The construction of sound proofed ducts and vents and the application of acoustical treatment to curved surfaces is simplified by the use of Perfofly, which may be decorated with flat oil paint or flat enamel to match surrounding surfaces. The construction of sound-proof windows and baffles is simplified by the use of Perfofly.

### SOUND ABSORPTION EFFICIENCY

Thickness of Insulwool covered with perforated plywood.	256	512	1024	2048
1 in. (no cavity behind Insulwool) .	37%	89%	94%	85%
2 in. (no cavity behind Insulwool) .	58%	96%	96%	85%
3 in. (no cavity behind Insulwool) .	70%	97%	96%	85%



"Perfofly"

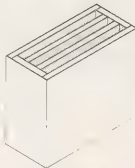
## PERFOSTEEL

Perfosteel, mainly used for industrial work, is similar in all respects to Perfofly, except that 26 gauge steel in 6 ft. x 3 ft. sheets is perforated and backed with Insulwool to form a highly efficient sound absorbing unit that is unsurpassed for use wherever hard wear and excessive vibration are encountered.

Walls and ceilings of Perfosteel are ideal for engine testing and blower rooms where intense sound is encountered.

### SOUND ABSORPTION EFFICIENCY

Thickness of Insulwool covered with perforated metal.	256	512	1024	2048
1 in. (no cavity behind Insulwool) .	37%	89%	94%	85%
2 in. (no cavity behind Insulwool) .	58%	96%	96%	85%
3 in. (no cavity behind Insulwool) .	70%	97%	96%	85%



Illustrated above is a typical Perfosteel with absorbent baffles

## PERFOVENTS

Ventilation of control rooms, executive offices, etc., where quiet or privacy are demanded, may be provided by means of Perfovents or sound-proofed duct work specially designed to prevent the passage of sound from one area to another. Perfovents small enough to be installed in the connecting door between two rooms and large enough to soften to a whisper the harsh notes of an engine exhaust are available to satisfy the requirements of commerce and industry.

# PERFOTILE INCREASES EFFICIENCY

## INVESTIGATION OF PROBLEMS

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Sound control problems vary, and their solution is not the result of hit and miss methods or the indiscriminate placing of sound absorbent materials. Accurate scientific surveys, using specially imported General Radio Noise Meters, are made by the technical staff of Insulwool Products before advice is offered concerning the most efficient and effective way to control sound and the best materials to use.

The manufacturers of these unique products have developed an installation department that is available for those who require first class sound control installation in the shortest possible time. This department has specialised in the application of Perfotile, etc., in existing buildings where modernisation programmes are being undertaken.

Industrial magnates, after careful investigation, have realised the beneficial effect of sound control on the output of their staff; textile mills are a particular case; for the Insulwool insulation incorporated in Perfotile helps to control the temperature and humidity within the factory to the limits so necessary in this industry.

No executive can cope with the thousand and one problems that confront him every day when he is subjected to continual noise. Perfotile ceilings are the answer to this problem which, if not tackled in the right manner, results in frayed nerves and lack of concentration.



Highly sensitive electronic equipment used by Insulwool technicians to determine intensity and frequency of noise to be controlled.

## BURGESS ACOUSTIC TELEPHONE BOOTHS

Available in several styles to suit individual conditions, they are prefabricated, ready for quick installation. Telephone conversations in the noise-free location can be made a pleasure with Burgess Acoustic Telephone Booths; they are ideal for use in factories, hotels, stores, etc.

## INSULWOOL PRODUCTS PTY. LTD.

20 Queen Street, Melbourne. Phone MU7064  
Ligar House, Carrington Street, Sydney, N.S.W. Phone BW4683  
Boundary Street, Brisbane, Queensland. Phone B3806

### Agents:

Bell Manufacturing & Trading Co., 1 Bright Street, Croydon, S.A. Phone L4154  
C. J. Rennie, Lampton Avenue, Derwent Park Hobart Phone. Glenorchy 274  
Aax Plaster Co. Ltd., Havelock Street, West Perth, W.A. Phone B 6158  
Hornburgh Bros., 572 Murray Street, Perth, West Australia  
Dunlop Sales Corporation Ltd., Auckland, Wellington, Christchurch and Dunedin, N.Z.

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# INSULATING MATERIALS

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By  
**BREWER**

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ASBESTOS and 85% MAGNESIA REMOVABLE PIPE COVERINGS -  
ASBESTOS COMPOSITION FOR PIPES and BOILERS - FELT PIPE  
COVERINGS - CORK BOARD and GRANULATED CORK - CORK  
SECTIONAL PIPE COVERINGS - NON-METALLIC, SEMI-  
METALLIC and METALLIC GLAND PACKINGS.

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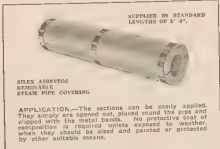
**W. H. BREWER PTY. LTD.**

22-26 BLACKWOOD STREET, NORTH MELBOURNE, VIC.

TELEPHONES: FJ2058 FJ6452

## 22 "Silex" Asbestos Removable Steam Pipe Covering

In order that steam or hot water may reach the furthest point of a heating system with a minimum heat loss, properly insulated pipe lines are of the utmost importance. Badly insulated pipes result in a greater fuel consumption to overcome these reductions in temperature. Heating systems insulated with "Silex" Asbestos Coverings reach a very high degree of efficiency; heat losses are reduced to a practicable minimum, and fuel savings in certain instances are as high as 80 per cent., while efficiency over bare pipe installation is as high as 90 per cent. "Silex" Asbestos Removable Steam Pipe Coverings consist of asbestos fibre and diatomaceous earth, the latter ingredient being used as a binding agent. They are available in sections 2 feet long with canvas cover and metal bands, for standard pipe sizes from 3 in. to 6 in. They are used for insulating either hot water or steam pipe lines. These sections can also be supplied made up of 85 per cent. magnesia. This material, however, is not mined in Australia.



### "Silex" 85% Magnesia Removable Steam Pipe Covering

A composition of carbonate of magnesia and clean asbestos fibre in the approximate proportions of 85 per cent. of the magnesia content and 15 per cent. of the asbestos binder. Fireproof, strong mechanically, exceptionally light in weight, and highly efficient as an insulating material.

Covered with canvas in sections 2 ft. long, and fitted with metal bands, they are made for pipe sizes from 3 in. to 6 in. Also supplied in plastic form.

A non-metallic and self-lubricating packing which displaces all forms and kinds of ring, spiral and other metal packings which are 3-5 times heavier in weight. Made in four grades:-

GRAPHIPAX No. 1.—Especially suitable for piston rod packing, steam, gas, ammonia, being used in a manner similar to the type known as metallic, semi-metallic and all other backings. It is designed for service against dry and wet steam, hot and cold water, acids, glycerine and compressed air. For pressures from the lowest up to 2,500 lbs. per sq. inch and a temperature of 1,300 deg. F. Specific gravity when compressed, about 1.8.

GRAPHIPAX No. 2.—For use on retaining pumps, piston rods, etc., handling hot and cold water,

## "GRAPHIPAX" A Universal Plastic and Elastic Packing



compressed air, gases, etc., also for valve glands working up to a temperature of 500 deg. F. pressure of 100 lbs. per sq. inch. Specific gravity about 1.8.

GRAPHIPAX No. 3.—Especially elastic, used for oil pumps, handline, petrol, kerosene, oil, greases, benzol, etc. Specific gravity about 1.8.

GRAPHIPAX No. 4.—Like No. 3, but heavier and used especially for pumps of all kinds, piston rods and valve spindles. Specific gravity about 1.8.

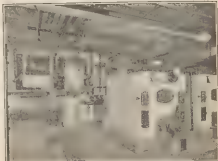
GRAPHIPAX "A" FULL METALLIC in ring form to suit all Rods and Pistons.

GRAPHIPAX "B" FULL METALLIC also in ring form. These packings are especially suited for high and high-pressure steam.

Please submit your plans. We also stock jointing for all purposes.

## "Silex" Asbestos Boiler Covering

This composition, when applied, forms a permanent non-conducting insulating covering to heating boilers, irregular surfaces, fittings, etc. This composition, similar to the material in the Removable Pipe Coverings, is available ready mixed in 5 cwt. cases, or dry in 1 cwt. bags. One cwt. (dry) covers approximately 35 sq. feet, one inch thick.



Boiler Room of G. J. Coles & Co. Ltd. Building, 232 Little Collins Street, Melbourne (Architect: Harry A. Nairn). Consulting Engineer: W. E. Cassatt. Note the neat appearance of all pipe lines, boilers, etc. All steam and hot water lines are efficiently covered with "Silex" Removable Pipe Covering - also all boilers, calorifiers and tanks are finished with "Silex" Plastic Boiler Covering.

APPLICATION.—No special knowledge or skill is required for application. By working to the following instructions, any workman can produce a satisfactory job:-

1. The dry composition requires to be mixed with water to the consistency of mortar. It is then ready for applying.
2. The surface must be hot and free from grease.
3. Take a handful of the composition and merely rub it on the hot surface to be coated, to which it adheres firmly, forming a thin, even coating.
4. When dry (which takes place rapidly), put on about half an inch thick of the composition, leaving hollows with top of fingers. When dry, continue the application in corresponding layers till desired thickness is obtained.
5. Having obtained the desired thickness, level off the finishing coat immediately on application with a wooden straight-edge, and finally smooth off with trowel while drying.
6. If it is desired to make the coating waterproof, give it a coat of common size and two coats of paint any desired colour.

## "Silex" Patent Pipe Covering

"Silex" Patent Brine and Ammonia Coverings consist of several layers of 3 in. hair felt treated with a special grade of Bitumen applied to piping with canvas covering and painted.



# "ZERISTO" CORK SECTIONAL PIPE COVERING

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"Zeristo" Cork Covering is a most efficient, durable and economic insulation for brine, ammonia, and chilled water pipe lines, also for hot water pipes. Its efficiency is due to a large measure to the peculiar characteristics of its sole ingredient, cork: granules of pure cork compressed

## Sizes

"Zeristo" Cork Covering is a moulded covering made to fit exactly all sizes of pipes. Light in weight, structurally strong, and made in 80 in. long half-sections, it can be quickly and easily applied to pipe lines. Bends, tees and

flanges are covered by special moulded fittings; bends can also be covered by short moulded sections cut on the mitre, and applied in several pieces, care being taken to fill all joints as set out below. Moulded-valve covers are also available.



## Application

Joints are sealed with a special Seam Filler and the covering wired in place with copper-clad steel wire; the whole is finished with—

1. Mastic Black Paint, or
2. Canvas painted with Brewer's "Elux" Waterproof paint to finish required, or
3. Special Cement Coating (white).

## Thickness

"Zeristo" Cork Covering is made in thicknesses varying from 1 in. to 4 in., to suit pipes ranging from 3 in. to 18 in. diameter, and in provide the degree of insulation essential for the various temperatures of pipe lines; the above sections are available from stock.

Three standard thicknesses are recommended, namely:—

1. For brine and ammonia pipes—1½ in. to 2½ in. wall thickness, varies with diameter of pipe.
2. For chilled water pipes—1½ in. wall thickness.
3. For hot water pipes—2 in. wall thickness.

Unless otherwise stated in ordering, the above thickness of cork insulation is supplied.

The following table gives the necessary clearances for the applied sections—

Thickness of Covering (For covered diameter)	Space required between parallel pipes	Space required between pipe and adjacent surface
Brine thickness up to 1 in. and including 1 in. pipes. Based on 3 in. thickness of cork	8 in.	6 in.
Chilled water thickness up to and including 2 in. pipe. Based on 2 in. thickness of cork	6 in.	4 in.
Hot Water Thickness—Based on 2 in. thickness of cork	3 in.	2 in.

and baked in moulds at a moderate temperature—the natural gum of the cork, liquefied by heat, cements the particles firmly together and renders them impervious to moisture.

## Specification

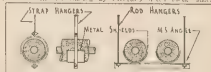
PIPE.  
After All..... (brine) (ammonia) (chilled water) (hot water) lines have been tested and made tight, they are to be covered with "Zeristo" Cork Sectional Pipe Covering of proper thickness for the service required. All joints shall be sealed with "Seam Filler" Seam Filler

FITTINGS.  
The fittings are to be insulated with "Zeristo" Moulded Cork Pipe Covering of a thickness to match the above pipe covering.

PREPARATION OF PIPE SURFACES.  
All foreign matter, such as scale, dust, oil, etc., is to be removed from all pipe surfaces, then primed with fast-drying Mastic Black Paint. Under no circumstances should pipes be covered while wet or in a treated condition.

OPENINGS.  
Wall and floor openings for insulated pipes must be large enough to allow the full thickness of the covering to be used.

HANGERS.  
All pipe hangers must be on the outside of the covering, and protect against chafing by a circular or rectangular plate, 2 in. x 2 in.



extending 4 in. on each side of the hanger and embracing the entire lower semi-circle.

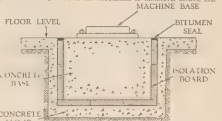
SPACING.  
Minimum spacing between pipes and adjacent surface shall be in accordance with the manufacturer's table covering same.

APPLICATION.—STRAIGHT LINES.  
Sectional covering is to be applied with all end joints broken, by making one-half of the first section 18 inches long and leaving the other half 36 inches in length. All longitudinal or lateral joints shall be on the top and bottom of the pipe and not along the sides. After fitting each section, pipe Seam Filler on the joints of one section only the last to be applied, press firmly together, then apply copper-clad steel wire rings, using not less than six wires to a 36 in. section, wires must be drawn up tight all around covering and slightly embedded in the cork. Fill up any opening in seams or broken edges with Seam Filler to leave a smooth and even surface.

APPLICATION.—BENDS AND FITTINGS.  
Similarly cover bends with..... (moulded sections) (sheet sections cut on the mitre filling up all cracks with Seam Filler). Also cover tees (and valves) with moulded cork sections.

FINISH.  
The whole pipe line is..... (to be given one good coat of Mastic Black Paint) or (to be covered with canvas woven or wrapped on and painted two good coats of approved brand waterproof paint) or (to be finished with special cement coating (white)).

Note.—The finish should be selected with care, having due regard to the exposure of the insulation to moisture, steam, etc.



## Insulation Board

Provides an economical and effective means of reducing noise and vibration produced by motors, engines, fans, pumps, grinding presses and practically all other kinds of moving machinery. Insulation Board is made by baking under pressure a selected grade of granulated cork; properly applied, it will not absorb moisture, and does not rot; it will not burn or take a permanent set, but retains its resiliency indefinitely. Available in boards 36 in. x 12 in. wide and in thicknesses ½ in. to 6 in.

SAMESBY'S CATALOGUE

# FLOOR, WALL, ROOF AND COLD STORAGE INSULATION

## "ZERISTO" CORK BOARD

### CORK—AN EFFICIENT INSULATOR

The most effective medium of insulation is universally recognised as that which is in a homogeneous form of minutely subdivided air-filled cells, hermetically sealed off one from another. Cork, which is produced from the bark of the cork tree grown in Spain, Portugal and other countries of the Mediterranean region, is a natural cellular formation composed entirely of minute cells containing air so effectively sealed as to prevent circulation from one cell to the other.

### HOW "ZERISTO" CORK BOARD IS MADE

Because of the obvious impracticability of the use of cork in its natural state, and of the necessity for convenience in application, "Zeristo" Cork Board—which is made entirely of cork and retains the natural insulating qualities of cork—is produced in slab form. Granulated cork, sifted to remove dust and fine particles, is subjected simultaneously to pressure and baking. During the process of baking the natural gum of the cork liquefies and forms a moisture-proof coating to each granule, and perfect cohesion to the whole mass, which is of light, strong and uniform density.

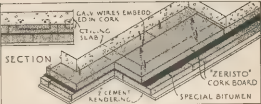
### PHYSICAL CHARACTERISTICS

"Zeristo" Cork Board possesses the essential factors necessary in insulating materials. Briefly, these are as follows:—

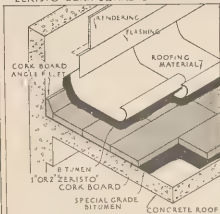
1. **LOW DENSITY**.—Relatively, the less dense a material, the better its insulating value.
2. **THERMAL CONDUCTIVITY**.—0.29 B.t.u. per hour; per sq. ft.; per 1 inch thickness per degree temperature difference. (McGraw-Hill University Texts.)
3. **WATERPROOF**.—"Zeristo" Cork Board will not absorb moisture either from the air or from damp materials. The gum of the cork which binds the cork granules together is moisture-proof.
4. **FIRE RETARDANT**.—"Zeristo" Cork Board does not support combustion. When in position it is practically fireproof and passes the Fire Underwriters' tests.
5. **STABILITY**.—"Zeristo" Cork Board DOES NOT shrink or swell with changes of temperature, nor does it disintegrate or break and tear under service conditions.
6. **SANITARY**.—It will not attract rodents; it will remain indefinitely in its original sanitary condition.
7. **GOOD PLASTER BASE**.—"Zeristo" Cork Board is an excellent plaster base.
8. **EASY APPLICATION**.—"Zeristo" Cork Board can be cut and sawn as easily as timber. It can be speedily erected as shown in the details below. Heavy cements are used in addition to the Portland cement backing in securing boards layer by layer to the first layer. Initial cost is reasonable, and the high insulating efficiency effects substantial economies in fuel savings in heating systems and in the operating of cold storage plants. CONSULT W. H. BREWER PTY. LTD. IN REFERENCE TO YOUR INSULATING PROBLEM.

SIZE OF SLABS	THICKNESS	WT. PER SQ. FT.	THERMAL CONDUCTIVITY
	1 IN.	1 LB.	0.29 B.T.U. PER HOUR, PER SQ. FT., PER INCH OF THICKNESS, PER DEGREE DIFFERENCE IN TEMPERATURE
36 IN. x 12 IN.	2 - 3 - 4 -	1 1/2 - 2 1/4 - 3 -	

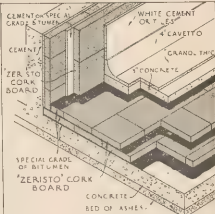
### "ZERISTO" CORK BOARD DATA



### METHOD OF FIXING AT CEILING



### TYPICAL ROOF INSULATION



### TYPICAL COLD STORAGE FLOOR AND WALL INSULATION

W. H. BREWER PTY. LTD.  
"ZERISTO" CORK BOARD  
WORKS

## "ZERISTO" CORK INSULATION

BLACKWOOD ST.  
N.W. MELB.

# AUSTRALIAN SISALKRAFT COMPANY PTY. LTD.

Head Office: 16 LOFTUS STREET, SYDNEY, AUSTRALIA

Mills: WATERLOO, N.S.W.

Distributed throughout Australia and New Zealand by:

New South Wales—F. W. WILLIAMS & CO. PTY. LTD., 16 Loftus St., Sydney.  
 Victoria—SISALKRAFT DISTRIBUTORS CO. PTY. LTD., 24 Bond St., Melbourne, C.I.  
 South Australia—HENRY BERRY & CO. (Australasia) LTD., Opposite G.P.O., Adelaide, S.A.  
 Queensland—HENRY BERRY & CO. (Australasia) LTD., 385-391 Adelaide St., Brisbane.  
 Tasmania—WILLIAM CROSSBY & CO. PTY. LTD., 23 Charles St., Launceston.  
 WILLIAM CROSSBY & CO. PTY. LTD., 119 Collins St., Hobart.  
 New Zealand—W. H. HUTHNANCE & CO., Nathan's Buildings, Grey St., Wellington.  
 W. H. HUTHNANCE & CO., 10 Dowling St., Dunedin.  
 P. HEATH-PREST & CO., Palmerston Buildings, 47 Queen St., Auckland.  
 SISALKRAFT DISTRIBUTORS W.A., 9 Howard Street, Perth.

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## BASIC CONSTRUCTIONAL PRINCIPLES OF SISALKRAFT PRODUCTS



The various components used in the different grades of Sisalkraft have each been rigidly tested for their suitability to perform their particular functions so that Sisalkraft is not a haphazard product but a carefully planned and scientific manufacture.

**STRENGTH.** No other material used for similar purposes possesses the strength of Sisalkraft. This is achieved by an internal reinforcement of crossed layers of non-elastic unspun sisal fibres with not less than 3,000 to the sq. yd. Sisal fibres are stronger than steel of their own weight, and are non-hygroscopic, therefore, they do not absorb moisture. Other reinforcements such as string, cotton, etc., act like wicks and become saturated with moisture along their whole length. This not only rots the reinforcement, but causes swelling, which frequently bursts the kraft surface, ruining the material as a waterproof membrane.

**WATER RESISTANCE.** Sisalkraft products contain two separate layers of special plastic bitumen. This bitumen is completely free from dryers, retaining its natural volatility, and, being shut off from contact with the air, maintains high water resistance for many years.

Reinforced Sisalkraft Products are reinforced BOTH ways—not ONE way only.

## DESCRIPTION OF PRODUCTS

### Standard Sisalkraft 30/30 and 60/60 grades.

**Components.**—Two layers of pure Plastic Bitumen in which are embedded crossed layers of non-elastic Sisal Fibres, of which there are 2,500 linear feet in each sq. yd. of material, all enclosed between two sheets of tough kraft paper. These six layers are combined together under heat and pressure, resulting in a product having a unique combination of strength, water resistance, cleanliness and permanence.

**Uses.**—Wall sheathing, roof sarking, bond breaking, insulation protection, dust and draught proofing, concreting and general protective purposes. Rolls, 300 lin. ft., widths 3ft., 4ft., and 5ft.

### "S-K" Hesheen.

Lighter grade of a similar combination to Sisalkraft specially manufactured for the following purposes.

**Uses.**—Concrete curing and protection, concrete subgrade lining, filling foundations and trenches and for a general protection during construction. Rolls, 300 lin. ft., width 5ft.

### "S-K" Fibreen. (Unbearable by Hand).

**Components.** Reinforced core of 22 oz. Woven Hessian composite impregnated with pure Bitumen. This solid waterproof membrane is enclosed between two stout kraft papers under heat and pressure.

**Uses.**—"S-K" Fibreen is employed for similar purposes to Standard 30/30 kraft with increased strength and waterproofing is required unbearable by hand. Rolls, 150 lin. ft., width 3ft.

### "S-K" Iron-Bark—Single Sheet.

**Components.**—A single layer of tough kraft impregnated with an oil-soluble treatment making it highly resistant to Dry Rot, Fungus and Mildew. This treatment also renders the material resistant to the adhesion of concrete. Not reinforced.

**Uses.**—Is principally used in the building trade as a lining for concrete formwork. Rolls, 300 lin. ft., widths 3ft., 4ft., and 5ft.

### "S-K" Iron-Bark Reinforced.

**Components.**—Two layers of pure plastic Bitumen in which is embedded crossed layers of non-elastic Sisal Fibres (2,500 linear feet to every sq. yd. of material), all of which are enclosed between two sheets of special treated kraft. This treatment renders the material highly resistant to Fungus, Dry Rot and Mildew, and to the adhesion of concrete.

**Uses.**—Concrete form lining, refrigeration, wall sheathing, bond breaking, roof sarking, insulation protection, dust and draught proofing and general protection, particularly where dry rot and fungus conditions exist. Rolls, 300 lin. ft., widths 3ft., 4ft., and 5ft.

### Sisalation.

**Components.**—Two layers of pure Plastic Bitumen in which are embedded crossed layers of non-elastic sisal fibres of which there are 2,500 linear feet in each sq. yd., all enclosed between two layers of stout kraft finished on the external surfaces with condensed alumina powder. The six layers are combined under heat and pressure resulting in a product possessing great strength, water resistance, high insulating value, cleanliness and permanence.

**Uses.**—Wall sheathing, Roof Sarking and wherever heat and cold insulation is desired.

### "S-K" Air-Felts.

Made in two grades No. 1 and No. 3.

**No. 1 Components.**—A waterproof core of Pure Plastic Bitumen, crossed layers of sisal fibre between one layer of low compression sound deadening felt and one layer of treated kraft.

**No. 3 Components.**—A waterproof core of Pure Plastic Bitumen, — a layers of sisal fibre between two layers of low compression sound deadening felt.

**Uses.**—Sound-deadening walls, floors, ceilings, under floor coverings, under wooden floors on concrete, under parquet floors, protecting insulation. Rolls, 15 lin. ft., widths 2ins. to 60ins.

HANSON'S CATALOGUE

# CONCRETE

## 22 CONCRETE CURING

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It is Sisalkraft's aim to provide a concrete curing compound which will prevent the evaporation of water from the surface of the concrete. This will prevent the concrete from becoming too dry, and thus prevent the formation of cracks. The compound is applied to the surface of the concrete in a thin layer, and it is found that it is very effective in preventing the evaporation of water from the surface of the concrete.

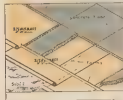
The following table sets out results obtained during curing tests carried out by Mr. A. H. Gurney, City Engineer at Sydney, N.S.W.

Curing Method	7 days, lbs	14 days, lbs	28 days, lbs
Sisalcrete of Soda	2,628	2,988	3,082
Concrete	2,992	2,700	3,116
Bituminous Emulsion	2,520	2,700	2,880
SISAL-KRAFT	3,456	3,720	3,960
Wet Sand	2,880	3,240	3,600
Calcium Chloride	3,744	3,960	4,248

It will be seen that the results achieved by Sisalkraft were only exceeded by Calcium Chloride which, in addition to its high cost, is a very serious danger to concrete, because if it is not used in the exact proportions it is liable to seriously decrease the strength.

The Sisalkraft method of curing on floors shows the curing proof to be quickly removed, carrying off all debris with it, leaving the finished surface ready for floor covering. In many cases the floor does not even require sweeping.

**SPECIFICATION**—After taking its initial set, all concrete shall be continually protected from drying-out, by covering with "S-K" Reinforced Heshreen (or other approved grade) in widest widths in man-made laps. "S-K" Heshreen should be lapped 6 ins. at joints, and the joints firmly held down in an approved manner. "S-K" Heshreen is to remain in position for at least seven days, in the case of finished floors, "S-K" Heshreen is to be maintained in good condition, until the completion of the contract.



## CONCRETE UNDERLAY AND LINING FOUNDATION TRENCHES

The following table shows the results of tests carried out by Messrs. David Kirkcaldy & Sons, testing and experimental works, 99 Southwark Street, London, S.E.1.

In Sub No. 1, the concrete was laid on Sisalkraft, and in Sub No. 2 the concrete was laid without a sub-grade lining.

Description	Age Days	Breadth Ins.	Thickness Ins.	Span Ins.	Total Breaking Load lbs.	Modulus of Rupture, lbs./sq. in.
Sub No. 1—						
Whole Sub	28	36	7	30	17,400	440
Half Sub	28	15 1/2	7 1/2	30	7,800	430
Sub No. 2—						
Whole Sub	28	36	7 1/2	30	16,200	340
Half Sub	28	30 1/2	7 1/2	30	8,000	340

The modulus of rupture in the above tests shows an increase in strength of 30 per cent, with the use of Sisalkraft. From this it will be realized the benefits to be gained when laying factory floors and foundation work generally from the use of a Sisalkraft Underlay. To-day, the British War Office specifies Sisalkraft curing and underlay for all concrete work undertaken by that Department.

**Grades to Specify: "S-K" Reinforced "HESHEEN," "S-K" "FIRREEN" or 30/30 or 60/60 grade "SISALKRAFT"**



**SPECIFICATION**—Before pouring ground floor concrete and foundations, all sub fill is to be covered with "S-K" Reinforced Heshreen for other approved grade. "S-K" Heshreen is to be lapped 6 ins. at joints, and returned up vertical faces of excavations, above height of finished concrete. Use widest widths to man-made joints.

## FORM LINING

The benefit of Sisalkraft form lining is best realized by inspecting the underside of a slab after stripping. It will be seen that all the cement paste is retained in the slab and there is no evidence of honeycombing whatever. Sisalkraft Form Lining was used in Messrs. Green's Building, New Building, Rural Bank, Amalgamated Factory, Australian Paper Mills, Farmer & Co's Building, etc., all of which prove its value as a Form Lining.

**Grades to Specify: "S-K" Single Sheet, Duplex or Reinforced IRON BARK.**

**SPECIFICATION**—Before pouring concrete, all formwork is to be lined with "S-K" Single Sheet Iron-Bark (or other approved grade). Material to be laid with treated surface up to the concrete, lapped 4 ins. at joints, and properly squared into all beam corners. Use widest widths to man-made joints. Formwork should be stripped while concrete is still "wet."



Grades to Specify: "S-K" Reinforced "HESHEEN" or 30/30 or 60/60 grade "SISALKRAFT."



## MOISTURE PROOFING

A material may be waterproofed but not reinforced. If during installation it becomes fractured, the whole purpose of the waterproofing is lost. This is the reason why **Stalcraft** contains 2,808 lb. of steel fibre (laid crosswise, not one way only) to every square yard of material, as material cannot be replaced after the job is completed.

### UNDER FLOOR COVERINGS

[illegible]

Grades to Specify: "S-K" Nos. 1, 2 or 3 Air-Felt.

## UNDER PARQUET FLOORS

Grades to Specify: 30/30 or 60/60 grade "545ALKRAFT"  
"S-K" No. 1, 2 or 3 Air-Felt. "S-K" Reinforced Iron-Bark.

**SPECIFICATION.—OVER WOOD SUB-FLOOR.**—Cover the whole of the wood sub-floor where Parquet floor is to be laid with "S-K" No. 3 Air-Felt (or other approved 5 mil kraft material) in widest width. Material to be laid flat but loosely, without fixing. "S-K" Air-Felt to be butted at joints and edges turned up 4 ins. around all vertical faces. Lay the Parquet over the "S-K" Air-Felt and secure nails.

\*S-K\* Air felt is used under Parquet floors to provide resilience. When resilience is not required, 50/50 or 60/60 grade **Sisalcraft** (approx. one-third cost) is specified.



## UNDER WOODEN FLOORS

**SPECIFICATION**—Cover the surface of the concrete, wherever wood floors are to be laid, with "S. K." Reinforced Iron Bark (or other approved grade **Sisalcraft**) running crosswise to the joists in widest widths, lapped 6 ins. at joints and returned up around all walls to a height of 6 ins. Lay loosely without firing, as basis for securing joists project through **Sisalcraft**. For "S. K." Air-Fit, specify butt joints.

Grades to Specify: "S-K" Reinforced Iron-Bark (dry-rot and fungus proof); 30/30 or 60/60 grade "SISALKRAFT"; "S-K" No. 1, 2 or 3 Air-Felt; "S-K" FIBREEN (Untearable by hand).

## BEHIND WOOD PANELLING

**SPECIFICATION.**—Cover ground work for wood panelling with 30/30 (or other approved grade of Sinalcraft, erected vertically, and lapped 4 ins. at joints, on vertical members of the framework. Secure with  $\frac{3}{4}$ -in. galvanized clout tacks. Do not draw the material tight; allow a fullness. Use widest widths possible to minimize joints.

Grades to Specify: 30/30 or 60/60 grade "SISALKRAFT" or "S K" Reinforced Iron-Bark (Dry-rot and Fungus Proof)



## SOUND INSULATION

The earlier results from sound insulation mainly failed because of the use of rigid materials, which required much cutting and fitting, and sound entered through every joint, thereby reducing the effectiveness of the insulation lining.

**"S-K" Air-Felt** was the scientific result of investigations throughout America and the Continent. It can be draped without creasing or shattering, either horizontally or perpendicularly bent and twisted and folded without desired without cutting, breaking, or as far as possible one combined sheet. The "draping" principle exposes the maximum surface area of material for sound absorption, and at the same time creates "dead air" spaces above and below, the value of which, as a check to sound transmission, will be quickly appreciated.

Grades to Specify, "S-K" Nos. 1, 2 or 3 Air Felt

## FLOORS

**SPECIFICATION A**—Before nailing floorboards, cover all joists with "S-K" No. 3 Air-Fit (or other approved grade) in widest widths well dropped between joists, with capped joints, and held in position with approved clouts.

**SPECIFICATION B.**—Intermediate floors are to be constructed with independent ceiling joists with a continuous layer of "S-K" No. 3 Air Felt (or other approved grade) in 5 ft widths laced between floor and ceiling joists, held in position with galvanized clouts.



## WALLS

**SPECIFICATION.**—Cover whole of the walls with "S-K" No. 3 Air-Felt (or other approved grade). "S-K" Air-Felt to be fixed horizontally in widest widths to minimize joints and lapped 3 ins. at joints. Secure to studs with  $\frac{1}{2}$  in. galvanized nails. Do not draw the material tight, but allow it to trough between the studs.

## BOND BREAKING

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### UNDER TERRAZZO

The specification for Terrazzo shown herein was originally developed in America. It is now accepted as the standard specification for all better class Terrazzo work. The great tensile strength of **Sisalcraft** makes it an integral part of the work, like steel, as the reinforcement enables it to resist fracture during the placing and tamping of the concrete.

Grades to Specify: 30/30 or 60/60 grade "**SISALKRAFT**" or "**S-K**" Reinforced "HESHEEN."

**SPECIFICATION**—Spread over concrete foundation a bed of dry sand about  $\frac{1}{2}$  in. thick, and cover this sand with a layer of 30/30 (or other approved) grade of **Sisalcraft**, lapped 4 in. at joints and turned up around vertical faces. Use widest widths to minimize joints. Over the **Sisalcraft**, lay an under-bed composed of 1 part Portland Cement and 4 parts coarse sand, and level off to exactly  $\frac{1}{2}$  in. below finished floor level. When the under bed has hardened tuff evenly, to withstand no injured the Terrazzo wearing surface  $\frac{3}{4}$  in. thick, composed 2 parts Marble Granule, 1 part Portland Cement. After setting and on shing, cover with "**S-K**" Reinforced Hesheen, and maintain in good condition until the completion of the contract.



### MASTIC ASPHALT

**Sisalcraft** provides the effective break between asphalt and concrete. Unlike saturated materials, **Sisalcraft** has no exposed bituminous surfaces and, therefore, it does not adhere to the surface of the concrete even under the application of hot asphalt.

Grades to Specify: 30/30 or 60/60 grade "**SISALKRAFT**" or "**S-K**" Nos. 1, 2 or 3 Air-Felt.

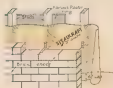
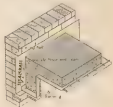
**SPECIFICATION**—When dry, the concrete is to be covered with 30/30 (or other approved) grade **Sisalcraft**, laid flat, lapped 4 in. at joints, turned up the full height of vertical faces, and dressed to the channels and butt in readiness for Asphalt Paving. In no case must the Asphalt be in direct contact with the Concrete or Brick Faces, strips of **Sisalcraft** being inserted, if as required, use widest widths to minimize joints.

### BETWEEN WALLS

The use of inferior materials for this purpose can often cause costly damage. **Sisalcraft** leaves nothing to doubt, as its reinforcement is sufficient to withstand fracture during the placing and turning of concrete, preventing any adhesion to adjoining walls and providing an effective and sure barrier.

Grades to Specify: 30/30 or 60/60 grade "**SISALKRAFT**."

**SPECIFICATION**—Where concrete abuts against the walls of adjoining buildings, 30/30 (or other approved) grade **Sisalcraft** is first to be placed against the walls, before the concrete is poured, to prevent seepage of water from the concrete damaging the adjoining building, and to provide a bond break. Use widest widths to minimize joints.



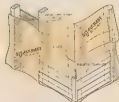
BRICK VENEER

### SHEATHING

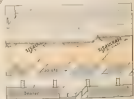
The purpose of wall and floor sheathing is to create a moisture and air barrier between the exterior and interior linings. Once the sheathing is installed it cannot be repaired, and it is therefore unwise to use inferior material of which might fail. **Sisalcraft** is reinforced both ways with crossed layers of Sisal Fibre, and for this reason it lasts as long as the house itself. **SISALATION** used as a sheathing will provide an appreciable measure of heat and cold insulation due to its reflective surfaces. This is in addition to the normal moisture and air proofing obtained with **Sisalcraft**. The surfaces of **SISALATION** will reflect approximately 45% of radiant heat falling upon them.

Grades to Specify: "**S-K**" Reinforced IRON-BARK (Dry-rat and Fungus Proof), 30/30 or 60/60 grade "**SISALKRAFT**" **SISALATION**.

**SPECIFICATION**—**WALLS**—Cover the whole of the exterior walls with 30/30 (or other approved) grade **Sisalcraft**. Sheathing to be fixed horizontally, in widest widths, returned over sills into all window and door openings, and lapped 6 ins. at joints. Vertical joints are to lap 18 ins. and must not occur within 3 ft. of any angles. Secure Sheathing to the studs with galvanized clout tacks. Only sufficient stud to be erected which can be covered over the same day.



WEATHERBOARDS.



## SISALKRAFT SARKING — Qualifications

**WATERPROOFING.** — migma protected waterproof core of pure natural plastic between

**REINFORCEMENT ELIMINATES WIRE NETTING:** Two layers of non-elastic Sisal Fibres, laid crosswise to each other, with 3,000 separate fibres to each sq. yd.

**NOT ONE WAY REINFORCED ONLY:** The wind pressure encountered in T.E. Roofs makes a reinforced material essential where wire netting is not used, but the material must be reinforced both ways to be satisfactory. If properly reinforced, the cost of wire netting can be saved and sound construction still maintained.

**FLEXIBILITY:** Sisalkraft Sarking has amazing flexibility. Erected Sarking can be wrapped around projections, fitted into corners, creased, folded, twisted or bent.

Grades to Specify: 30/30 or 60/60 grade "SISALKRAFT" or "S-K" FIBREEN (untenable by hand) or SARKING.

### SARKING ABOVE RAFTERS

**SPECIFICATION:** — Cover whole of roof throughout, under roofing tiles or iron sheet or slating, with 30/30 for other approved grade Sisalkraft, fixed to top of the rafters with galvanized clout tacks, laid horizontally and staggered to the purlins. Laid 6 ins. at horizontal and vertical to Roofing battens to be laid through the Sarking to the rafters. Use widest widths to minimize joints. Only sufficient material to be erected which can be covered over the same day.



### SARKING BELOW RAFTERS

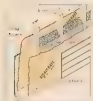
**SPECIFICATION:** — Cover whole of underside of rafters with 30/30 for other approved grade Sisalkraft, laid horizontally, staggered 6 ins. of joints, with not less than 3 in. sag between joists. Sarking at eave and overhanging carried over the purlins separately. Use widest widths to minimize joints. Cut Sarking at bottom of rafters and only to carry water to eave. 4 1/2 in. of cavity. Fix 1 in. "S-K" Sarking strip down full length of rafters with galvanized clout tacks to secure Sarking.



### SARKING ABOVE CEILING JOISTS

**SPECIFICATION:** — Cover whole of ceilings on top of ceiling joists with 30/30 for other approved grade Sisalkraft run with the joists, and staggered 4 ins. at joints, with not less than 3 in. sag between joists. All joints must be made on top of joist. Sarking at end of joist to be brought up level with top of joist to form ends to troughs. Use widest widths to minimize joints, and allow sufficient for laps and troughing.

An alternate method of protecting ceilings is to erect the material on the underside of the ceiling joists before the ceilings themselves are fixed.



## THERMAL INSULATION

### REFRIGERATION

Once a sheathing for insulation is installed it is extremely difficult to replace and, as a fracture of the sheathing would ruin the efficiency of the insulation, it is essential that reliable material should be used. Sisalkraft is the only material reinforced both ways with crossed layers of non-elastic Sisal Fibres (not one way only) and is therefore superior to any other material for refrigeration purposes.

Grades to specify: 30/30 or 60/60 grade "SISALKRAFT", "S-K" Reinforced Iron-Bark SARKING

**SPECIFICATION:** — A minimum is to be covered by one sheet of 30/30, or other approved grade Sisalkraft, erected horizontally and lapped 4 ins. horizontal joints, and 6 ins. vertical joints. All joints to be staggered with minimum one inch. Material to be erected in longest possible lengths and in widest widths to eliminate unnecessary joints and no vertical joints to occur within 3 ft. of any angle.

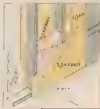
### DRY FILL INSULATION

Unreinforced material is likely to fracture either during or after installation, and this would not only allow moisture and dirt to enter the insulation, but would probably cause a considerable loss of the insulating material itself. Sisalkraft sheathing can be erected without fracturing and will stand up to all vibration and weather once it has been fixed to the inside of the house.

Grades to Specify: 30/30 or 60/60 grade Sisalkraft.

"S-K" Reinforced Iron-Bark SARKING

**SPECIFICATION FOR WALLS:** — All external walls where cavity is to be insulated with dry fill insulation are to first be sheathed on both sides with 30/30 for other approved grade Sisalkraft erected horizontally and staggered 4 ins. at horizontal joints and 6 ins. at vertical joints. Material to be erected in longest possible lengths and in widest widths to eliminate unnecessary joints and no vertical joints to occur within 3 ft. of any angle. "S-K" 9-ply Board Fibres to be inserted where recommended by Sisalkraft Manufacturers.



**Tough — Airtight — Waterproof — White Ant Proof — Heavily Reinforced — Dry Rot and Fungus Resistant — Flexible — Non-Shattering — 5-foot Widths.**

**5 FT. WIDTHS — FEWER LAPS, LESS WASTE:** Sisalkraft Sarking is the only material available in 60 inch widths. It is 24 inches wider than other Sarking materials.

**TROUBLED BETWEEN RAFTERS:** The essential feature of Sarking with dry material is to provide a "trough" between rafters. This "trough" not only allows for contraction of the Sarking material due to moisture changes, but also provides the necessary channel down which storm splash or condensed moisture runs away.

**INSULATION:** Tests have shown that the surface of SARKING will reflect approximately 48% of radiated heat falling upon them, meaning when SARKING is employed as a roof sarking on appropriate amount of insulation a obtained in addition to the normal functions of sarking.

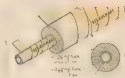
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LAGGING TAPE

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very of its price, and of the ease with which it can be applied, and the fact that it is a non-combustible material, with the result that the service was not completely satisfactory. The cost of Sisalkraft Lagging Tape is so small that it enables the Architect to have the insulation properly protected, procuring maximum results.

Guides to Specify: Sisalkraft Bandage Wrap, A, B, or C, "S-K" No. 1 or No. 2 Air-Felt, "S-K" Fibreen.

If surface is exposed to the weather, specify "S-K" Fibreen.

**SPECIFICATION**—Before applying insulation, wrap all bare refrigeration pipes with Sisalkraft Lagging Tape, apply spirally and lapped one-third of its width. Over this, apply approved insulation to form a continuous even surface. When this is completed, apply a further wrapping of Sisalkraft Lagging Tape wound spirally, and lapped one-third of its width. Do not draw too tightly, but sufficiently firm to hold in position. End completed wrap at regular intervals with light non-corrosive wire.

PROTECTION DURING CONSTRUCTION

Sisalkraft is ideal for all types of protection during construction or renovation. When used for screening off, its pleasant, golden colour requires no decoration but if desired, the surface can be painted, kalsomined or wallpapered to match the surrounding work. Being reinforced internally with 2,808 lin. ft. of Sisal Fibre laid crosswise in each sq. yd. (not one way only) Sisalkraft can be used over and over again, and very often one roll is sufficient for an entire building.

The particular type of protection for which the "S-K" Hasheen is required determines the method of use, but for any purpose at all, erect the material loosely to a dow for shrinkage.

If it is desired to colour the material to match surrounding work, Paint, Kalsomine or Wallpaper may be applied with equally effective results. If oil paint is used, the "S-K" Hasheen must first be given a thorough coat of Glue S36.



Protecting floors during alterations and renovations.

TRUST BUILDING, SYDNEY,  
Contractors: Stuart Bros.  
Architect: Samuel Lipson.



Shutting off during demolition and re-building. Completely successful for outside and inside use.

D CHALLIS HOUSE, SYDNEY,  
Architects: Hensley, Hensley & Co.  
Contractors: Concrete Constructors Ltd.



Screening off during installation of escalators. Dust-proof protection for stock and customers.

FARMER'S EMPORIUM, SYDNEY,  
Architects: Robertson, Marles & McCredie  
Contractors: Messrs. Howe & Moffatt & Co. Pty.

Temporary ceiling during demolition and reconstruction of permanent ceiling.

WOOLWORTH'S STORE, SYDNEY,  
Contractor: James Leckie.



Protecting inside wall finish from moisture penetration before installation of permanent facing.

M.L.C. BUILDING, SYDNEY  
Architects: Bates, Smart & McCutcheon  
Contractors: Concrete Constructors Ltd.



**ASBESTOS CEMENT  
PRODUCTS**

SECTION

**23**

SECTION

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CATALOGUES 1 and 2

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# JAMES HARDIE & COY. PTY. LTD.

SOLE MANUFACTURERS OF

## HARDIE'S GENUINE "FIBROLITE" ASBESTOS CEMENT PRODUCTS

SYDNEY: "Asbestos House," York Street.  
NEWCASTLE: 324-326 King Street.  
MELBOURNE: City Rd and Charendon St.  
South Melbourne.

BRISBANE: Breakfast Creek Rd, Newstead  
PERTH: Riverside  
NEW ZEALAND: Portsea, S.E.O. Auckland.  
TASMANIAN AGENTS: F. H. Stephen Pty Ltd, Hobart and Launceston

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### "FIBROLITE" FLAT SHEETS

The Economical, Fire Retardant and Durable  
building material for Exterior and Interior  
Walls, Ceilings, Partitions, Gable-ends, Eaves  
Soffits, etc.

#### STANDARD THICKNESSES AND WEIGHTS:

No 1 Sheets 3/16" Thick (approx) —  
For Exterior Walls, Gables, etc.  
1 Square Yard = 18 lbs. approx.

No 4 Sheets 1/8" Thick (approx). —  
For Interior Walls, Ceilings, etc.

Thicker Sheets: Manufactured to order in thicknesses, 1", 5/16",  
1", 1", and 2", in stock sizes shown hereunder

#### STOCK SIZES

1' 6" wide x 1', 4', 6', 8', 10', 12', 14', 16', 18' and 20' long  
1' 6" x 3' 6", 3' 6" x 6', 6' x 6', 6' x 12', 12' x 12', 12' x 18',  
1' 6" x 3' 6", 3' 6" x 6', 6' x 6', 6' x 12', 12' x 12', 12' x 18',  
1' 6" x 3' 6", 3' 6" x 6', 6' x 6', 6' x 12', 12' x 12', 12' x 18',

### "FIBROLITE" MOULDINGS

For use with "Fibrolite" Flat Sheets.  
Stock Lengths: 8', 7', 6', 5' and 10'.

#### "FIBROLITE" COVER MOULDING:

Sizes:—1 1/2" x 5/16",  
3" x 5/16".



#### "FIBROLITE" ANGLE MOULDING:

Supplied for exterior or interior angles,  
as ordered.

Sizes: 1 1/2" x 1 1/2" x 5/16",  
2" x 2" x 5/16".



### "FIBROLITE" HORIZONTAL MOULDING—Art. 15

For horizontal paneling of walls  
covered with "Fibrolite" Flat  
Sheets.

A weatherstrip must be used with  
this moulding.



### "FIBROLITE" HORIZONTAL MOULDING—Art. 14

For covering horizontal joint at inter-  
sections of Fibrolite Sheets with  
weatherboards. Weatherstrip must be  
used with this moulding.



### "FIBROLITE" VENTILATORS



EXTERNAL



INTERNAL

RAMBAY'S CATALOGUE

### "FIBROLITE" FLUE PIPES AND FITTINGS

For Gas Stoves, Bath Heaters,  
Slow Combustion Stoves, etc.  
Rust-proof and Resistant to Sea  
Air.

Sizes: 2", 3", 4", 5", 6" and 8"  
internal diameter

#### Lengths:

Socketed Pipes—  
3' 4" (2' effective),  
6' 4" (6' effective)

#### Plain Pipes—

7' 4" and 9'

Bends, Tees, Sockets, Couls, etc.,  
to suit



### "TILUX" (Regd.)

#### MARBLE FINISHED ASBESTOS-CEMENT SHEETS

An economical, artistic and hygienic  
wall covering for bathrooms, kitchens,  
pantries, restaurants, shops, sur-  
geries, hospitals, etc.

#### Patterns:

Old Ivory,  
Meadow Green,  
Pearl Grey.

Sizes:  
6' x 2', 6' x 4', 8' x 2', 8' x 4'.



### "VELO TILE" (Regd.)

#### ASBESTOS-CEMENT WALL TILE SHEETING

For bathrooms, kitchens, pantries,  
etc. "Velotile" Sheets are tile-  
patterned, each tile or square being 4 in.  
x 4 in., formed with clean-cut grooves.

#### Sizes:

4' x 2', 6' x 2', 7' x 2', 8' x 2',  
6' x 4', 8' x 4', 9' x 4', 8' x 6'.



Catalogues, Price Lists, Samples, and any further  
information desired for "FIBROLITE" Products,  
"TILUX" or "VELO TILE," will be gladly sup-  
plied on application.

JAMES HARDIE & COY. PTY. LTD.

# JAMES HARDIE & COY. PTY. LTD.

## HARDIE'S "FIBROLITE" CORRUGATED SHEETS AND ACCESSORIES

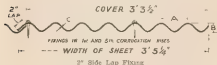
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The Durable and Economical Roofing and Siding for factories, stores, warehouses, and all types of industrial, commercial and public buildings.

### "FIBROLITE" SUPER-SIX (Regd.) SHEETS:

Manufactured in standard width of 3' 5 1/2" for fixing with 2" or 7" side lap, as desired



Nominal Dimensions: Pitch (A) 60° Overall Depth (B) 2" Thickness (C) 3"

Lengths: 4' 0", 5' 0", 6' 0", 7' 0", 8' 0", 9' 0", 10' 0", 11' 0", 12' 0", 13' 0", 14' 0", 15' 0", 16' 0", 17' 0", 18' 0", 19' 0", 20' 0", 21' 0", 22' 0", 23' 0", 24' 0", 25' 0", 26' 0", 27' 0", 28' 0", 29' 0", 30' 0", 31' 0", 32' 0", 33' 0", 34' 0", 35' 0", 36' 0", 37' 0", 38' 0", 39' 0", 40' 0", 41' 0", 42' 0", 43' 0", 44' 0", 45' 0", 46' 0", 47' 0", 48' 0", 49' 0", 50' 0", 51' 0", 52' 0", 53' 0", 54' 0", 55' 0", 56' 0", 57' 0", 58' 0", 59' 0", 60' 0", 61' 0", 62' 0", 63' 0", 64' 0", 65' 0", 66' 0", 67' 0", 68' 0", 69' 0", 70' 0", 71' 0", 72' 0", 73' 0", 74' 0", 75' 0", 76' 0", 77' 0", 78' 0", 79' 0", 80' 0", 81' 0", 82' 0", 83' 0", 84' 0", 85' 0", 86' 0", 87' 0", 88' 0", 89' 0", 90' 0", 91' 0", 92' 0", 93' 0", 94' 0", 95' 0", 96' 0", 97' 0", 98' 0", 99' 0", 100' 0"

Approx. Weight per 100 sq. ft. 4" and 10" Roof

2" Side Lap Fixing—220 lbs  
7" Side Lap Fixing—270 lbs

Spacing of Roof Purlins or Battens Should be set out up to but not exceeding 48" centres

Spacing of Girts for Wall Siding. Should be set out up to 48" centres within 16' of floor level. Above this level, girts may be spaced up to 72" in centres, provided side laps are fastened together with 1" x 3" gutter bolts between girts

Batten Sizes: Where battens are used on rafters up to 36" centres, they should not be less than 2" x 1 1/2"

Hips: It is essential that battens be fixed on each side of all hip rafters to support the rake cut edges of the roofing sheets and the hip ridging

Pitch and End Lap: For normal positions, an end lap of 6" may be used with a pitch of about 20°

### "FIBROLITE" STANDARD SHEETS

Manufactured in standard width of 3' 7 1/2" for fixing with 3" side lap of 11 corrugations



11 Corrugations Side Lap Fixing

Nominal Dimensions: Pitch (A) 30° Overall Depth (B) 1 1/2" Thickness (C) 7/16"

Lengths: 4' 0", 5' 0", 6' 0", 7' 0", 8' 0", 9' 0", 10' 0", 11' 0", 12' 0", 13' 0", 14' 0", 15' 0", 16' 0", 17' 0", 18' 0", 19' 0", 20' 0", 21' 0", 22' 0", 23' 0", 24' 0", 25' 0", 26' 0", 27' 0", 28' 0", 29' 0", 30' 0", 31' 0", 32' 0", 33' 0", 34' 0", 35' 0", 36' 0", 37' 0", 38' 0", 39' 0", 40' 0", 41' 0", 42' 0", 43' 0", 44' 0", 45' 0", 46' 0", 47' 0", 48' 0", 49' 0", 50' 0", 51' 0", 52' 0", 53' 0", 54' 0", 55' 0", 56' 0", 57' 0", 58' 0", 59' 0", 60' 0", 61' 0", 62' 0", 63' 0", 64' 0", 65' 0", 66' 0", 67' 0", 68' 0", 69' 0", 70' 0", 71' 0", 72' 0", 73' 0", 74' 0", 75' 0", 76' 0", 77' 0", 78' 0", 79' 0", 80' 0", 81' 0", 82' 0", 83' 0", 84' 0", 85' 0", 86' 0", 87' 0", 88' 0", 89' 0", 90' 0", 91' 0", 92' 0", 93' 0", 94' 0", 95' 0", 96' 0", 97' 0", 98' 0", 99' 0", 100' 0"

Approx. Weight per 100 sq. ft. Fixed on Roof

80 lbs Fixed on Roof 100 lbs

Spacing of Roof Purlins or Battens: Should be set out up to but not exceeding 24" centres

Spacing of Girts for Wall Siding: Should be set out up to 48" centres within 16' of floor level. Above this level, girts may be spaced up to 58" centres

Batten Sizes: Where battens are used on rafters up to 36" centres, they should not be less than 2" x 1 1/2"

Hips: It is essential that battens be fixed on each side of all hip rafters to support the rake cut edges of the roofing sheets and the hip ridging

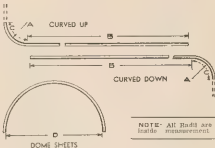
Pitch and End Lap: For normal positions, an end lap of 6" may be used with a pitch of about 20°

### "FIBROLITE" CURVED CORRUGATED SHEETS

Table hereunder shows curves to which "Fibrolite" Super-Six and "Fibrolite Standard" Corrugated Sheets are manufactured to order.

"A" Inside Radius of Curve	"B" Maximum Length of Straight Portion	"C" Short Maximum
1' 0"	8' 3"	1' 0"
1' 3"	9' 3"	1' 3"
1' 6"	10' 3"	1' 6"
2' 0"	11' 3"	2' 0"
2' 3"	12' 3"	2' 3"
2' 6"	13' 3"	2' 6"
3' 0"	14' 3"	3' 0"

Maximum Overall Length 16' 0"



"Curved Up" or "Curved Down" Corrugated Sheets may be extended as shown by dotted lines, maximum extension being 5" at not less than 90° to main straight portion, which is proportionately reduced in length

### DOMES SHEETS

Inside Diameter "D"—2' 0", 3' 0", 4' 0", 5' 0", 6' 0", 7' 0", 8' 0", 9' 0", 10' 0", 11' 0", 12' 0", 13' 0", 14' 0", 15' 0", 16' 0", 17' 0", 18' 0", 19' 0", 20' 0", 21' 0", 22' 0", 23' 0", 24' 0", 25' 0", 26' 0", 27' 0", 28' 0", 29' 0", 30' 0", 31' 0", 32' 0", 33' 0", 34' 0", 35' 0", 36' 0", 37' 0", 38' 0", 39' 0", 40' 0", 41' 0", 42' 0", 43' 0", 44' 0", 45' 0", 46' 0", 47' 0", 48' 0", 49' 0", 50' 0", 51' 0", 52' 0", 53' 0", 54' 0", 55' 0", 56' 0", 57' 0", 58' 0", 59' 0", 60' 0", 61' 0", 62' 0", 63' 0", 64' 0", 65' 0", 66' 0", 67' 0", 68' 0", 69' 0", 70' 0", 71' 0", 72' 0", 73' 0", 74' 0", 75' 0", 76' 0", 77' 0", 78' 0", 79' 0", 80' 0", 81' 0", 82' 0", 83' 0", 84' 0", 85' 0", 86' 0", 87' 0", 88' 0", 89' 0", 90' 0", 91' 0", 92' 0", 93' 0", 94' 0", 95' 0", 96' 0", 97' 0", 98' 0", 99' 0", 100' 0"

■ FIXING: Directions for fixing "FIBROLITE" Super-Six and "FIBROLITE" Standard Corrugated Sheets, supplied on application

# HARDIE'S "FIBROLITE" CORRUGATED SHEETS AND ACCESSORIES (Continued)

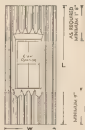
## "FIBROLITE" FIXED SKYLIGHTS

"FIBROLITE" SUPER-SIX  
—Art. 80 and 81  
"FIBROLITE-STANDARD"  
—Art. 76 and 77

Supplied for use with "Fibrolite" Super-Six and "Fibrolite-Standard" Corrugated Sheets, with opening in position as ordered. Supplied unglazed; 1 in. wired glass supplied for glazing if specially ordered.

WIDTH "W":  
ART. 80 and 81 ("Super-Six")  
—3' 5 1/2"  
ART. 76 and 77 ("Standard")  
—2' 11 1/2"

LENGTH "L":  
As required, up to 10 ft. overall.



	Clear Opening	Size of Glass
ART. 80 ("Super-Six")	3' 2 1/2" x 1' 8"	2' 6" x 1' 8" x 1/4"
ART. 81 ("Super-Six")	3' 0" x 1' 8"	2' 4" x 1' 8" x 1/4"
ART. 76 ("Standard")	2' 5" x 1' 8"	2' 2" x 1' 8" x 1/4"
ART. 77 ("Standard")	2' 3" x 1' 8"	2' 0" x 1' 8" x 1/4"

## "FIBROLITE" RIDGE CAPPINGS

### "FIBROLITE" 2-PIECE FLUTED RIDGE CAPPING

An adjustable 2-piece fluted ridge capping to suit any normal pitch of roof. For main ridges only (for hips use 2-piece plain ridge capping Art. 85).

Art. 96: For "Super-Six" Sheets fixed with 2" side lap. Length 2' 11 1/2", nett cover 3' 3 1/2", Wing (A) 14".

Art. 96A: For "Super-Six" Sheets fixed with 1" side lap. Length 2' 11 1/2", nett cover 3' 1 1/2", Wing (A) 14".

Art. 96: For "Fibrolite-Standard" Sheets. Length 2' 11 1/2", nett cover 3' 4 1/2", Wing (A) 10".



### "FIBROLITE" FLUTED SAW-TOOTH RIDGE CAPPING

A fixed single ridge capping manufactured to order to suit any pitch.

Art. 95: For "Super-Six" Sheets fixed with 2" side lap. Length 2' 11 1/2", nett cover 3' 3 1/2".

Art. 95A: For "Super-Six" Sheets fixed with 1" side lap. Length 2' 11 1/2", nett cover 3' 1 1/2".

Art. 95: For use with "Fibrolite-Standard" Sheets. Length 2' 8", nett cover 3' 4 1/2".



### "FIBROLITE" 2-PIECE PLAIN ROLL RIDGING—ART. 92



An adjustable ridge cap, plus with plain finish for covering hips or main ridge of "Fibrolite" Corrugated Sheets.  
Stock Size 3' x 9".  
Length: 8' 0" (nett cover 8' 0").

## "FIBROLITE" HIP STARTER—ART. 202

For use with "Fibrolite" Plain Roll Ridging Art. 92.



## "FIBROLITE" STOP-END CAPS:

Art. 215: For "Fibrolite" 2-Piece Fluted Ridge Capping (Art. 95, 96, or 96A), or 1-Piece Plain Roll Ridging (Art. 92).

Art. 208L: (For left-hand end of roof.)  
—208R: (For right-hand end of roof.)

For junction of "Fibrolite" Super-Six Saw-tooth Ridge Capping (Art. 95 or 95A) and "Fibrolite" Barge Moulding (Art. 196).

Art. 213L: (For left-hand end of roof.)  
—213R: (For right-hand end of roof.)



For junction of "Fibrolite-Standard" 1-Piece Fluted Saw-tooth Ridge Capping (Art. 92) and "Fibrolite" Barge Moulding (Art. 196).

## "FIBROLITE" FLASHINGS

### "FIBROLITE" SIDE FLASH NG

For flashing sides of "Fibrolite" Corrugated Sheets at parapet walls to take lead over-lapping.



Length: 3' 4" to cover 5'.

For "Fibrolite" Super-Six Sheets  
ART. 207L: With left-hand socket for left-hand end of roof.  
ART. 207R: With right-hand socket for right-hand end of roof.

For "Fibrolite-Standard" Sheets  
use—

ART. 218L: With left-hand socket for left-hand end of roof.  
ART. 218R: With right-hand socket for right-hand end of roof.

### "FIBROLITE" FLUTED APRON FLASHING

For flashing at head of "Fibrolite" Corrugated Sheets against parapets, etc., to take lead over-lapping. Can only be used where line of intersection of abutment is square with roof corrugations.



ART. 98: For "Super-Six" Sheets fixed with 2" side lap. Lengths 3' 6", nett cover 5' 3 1/2".

ART. 98A: For "Super-Six" Sheets fixed with 1" side lap. Lengths 3' 1 1/2", nett cover 5' 1 1/2".

ART. 98: For "Fibrolite-Standard" Sheets fixed with 1 1/2 corrugations side lap. Lengths 3' 8", nett cover 5' 4 1/2".

### "FIBROLITE" FLUTED GUTTER FLASHING

For flashing gutters at roof slopes covered with "Fibrolite" Corrugated Sheets. Acts as lip-protection. Designed to fit any pitch of roof.



ART. 87: For "Super-Six" Sheets fixed with 2" side lap. Lengths 3' 11 1/2", for butt joints. Length of fluted wing, 5".

ART. 87A: For "Super-Six" Sheets fixed with 1" side lap. Lengths 3' 10 1/2", for butt joints. Length of fluted wing, 4".

ART. 88: For "Fibrolite-Standard" Sheets fixed with 1 1/2 corrugations side lap. Lengths 3' 4 1/2", for butt joints. Length of fluted wing, 5".

# HARDIE'S "FIBROLITE" CORRUGATED SHEETS AND ACCESSORIES (Continued)

23  
I

## "FIBROLITE" SCRIBED BIRDPROOFING PIECE:

Tread for chasing corrugations of "Fibrolite" Corrugated Sheets, where required. For fixing to wood only, with butt joints.

Depth "A," 6" Other depths manufactured to order.  
ART. 88: For "Super-Six" Sheets fixed with 2" side lap. Lengths 2' 10", for butt joints.

ART. 88a: For "Super-Six" Sheets fixed with 1" side lap. Lengths 2' 10", for butt joints.

ART. 89: For "Fibrolite Standard" Sheets fixed with 1 1/2 corrugations side lap. Lengths 2' 4 1/2", for butt joints.



## "FIBROLITE" ROOF VENTILATORS

Supplied as ordered for fixing—

- (1) On ridge, using Ridge Base Art. 232a.
- (2) On roof slope, using Roof Slope Base Art. 232b



DIMENSIONS

diam. "D"	"A"	"B"	"C"	"E"
3"	3"	3"	3"	3"
4"	4"	4"	4"	4"
5"	5"	5"	5"	5"
6"	6"	6"	6"	6"
8"	8"	8"	8"	8"
10"	10"	10"	10"	10"
12"	12"	12"	12"	12"

\* For use with Super-Six Sheets only

## "FIBROLITE" LULVRE BLADES:

Normal thickness, 5/16".  
Supplied in plain lengths, undrilled. Maximum length, 8'.



## "FIBROLITE" BOX GUTTERS — ART. 130

Manufactured to order in sizes shown hereunder with plain sockets, tipped or stepped ends, in accordance with requirements. Plain or sump outlets for downpipes, offsets, angles, and junctions in positions as required.

Effective Lengths: As required up to 10'.

Inside Width "A": 9", 12", 15", 18", 24", and 30", nom.

Overall Width "B": In all cases overall width "B" at sockets is equal to inside width "A" plus 6".

Inside Depth "C": As required (min. 4") with uniform or increasing depth.

Overall Depth "D": In body of gutter: Equal to inside depth "C" at same point plus thickness "E".

Overall Depth "E" at Sockets: Equal to inside depth "C" at same point plus 1 1/2".

Thickness "T": 3" gutter, 3", 3 1/2", 4", 5", and 6" gutters, 7/16"; 30" gutter, 5".



SECTION



DETAIL OF JOINT

## "FIBROLITE" EXTERNAL RAINHEADS:

For use with "Fibrolite" Box Gutters.  
Supplied with outlets to suit downpipes.



Nominal Sizes:

Art. 132	18" x 12"
Art. 133	24" x 12"
Art. 134	30" x 12"

## "FIBROLITE" EAVES GUTTERS

Manufactured with plain, socketed or stepped ends in accordance with requirements. Plain or sump outlets for downpipes in positions as desired. Internal or external angles as necessary.



SECTION



DETAIL OF JOINT

DIMENSIONS:

Inside Width	Effective Length	Inside Depth	Radius	Thickness
3"	3"	3"	3"	3/16"
4"	4"	4"	4"	3/16"
5"	5"	5"	5"	3/16"
6"	6"	6"	6"	3/16"
8"	8"	8"	8"	1/2"

\* Shorter lengths made as required.

## "FIBROLITE" EXTERNAL RAINHEAD—ART. 177

For use with "Fibrolite" Eaves Gutters.  
Supplied with outlet to suit downpipes.

Nominal Size: 12" x 6".



## "FIBROLITE" DOWNPIPES

Nominal Size: 3", 4", 5" and 6" internal diameter.

Length: 5' 4" (5' effective)

Shorter lengths to order

Bends: Manufactured to order with angle of 90°, 95°, 120°, and 135°

Junctions and Tees: Manufactured with angle of 45°, 60°, 90° and 95°

Accessories supplied to suit downpipes.



## "FIBROLITE" BARGE AND VERTICAL CORNER

Moulding—Art. 106:

Supplied with plain or socketed ends, as ordered. When required as vertical corner moulding, supplied for internal or external use, as ordered.

Sizes:

6" x 5", 8" x 5", and 10" x 10"

Lengths:

Socketed . . . 5' 4" (5' 4" effective)

Plain . . . 5' 4"

Shorter lengths manufactured to order



CATALOGUE: Catalogues, instructions for fixing, and full information regarding "Fibrolite" Corrugated Sheets, Box Gutters, and accessories, will be gladly supplied on application.

JAMES HARDIE & COY. PTY. LTD.

RANSBY'S CATALOGUE



# Wunderlich Limited

Manufacturers of

## "DURABESTOS" ASBESTOS - CEMENT PRODUCTS

Administration: BAPTIST STREET, REDFERN, SYDNEY, N.S.W.

Showrooms and Offices  
SYDNEY: Baptist Street, Redfern.  
SOUTH MELBOURNE: 210 Hanna St.  
ADELAIDE: Grote and Morphett Streets.  
PERTH ASSOCIATES: M. L. Brisbane &  
Wunderlich Ltd., Land and Short Sts.

DURABESTOS WORKS  
Rosehill—New South Wales  
Sunshine—Victoria



Showrooms and Offices:  
BRISBANE: 100-110 Brunswick Street, Valley.  
NEWCASTLE: King Street (near Auckland Street).  
HOBART: T. & O. Building,  
Collins and Murray Streets.  
LAUNCESTON: 137 Clarendon Street.

DURABESTOS WORKS  
Gaythorne—Queensland

23  
2

"DURABESTOS" (Asbestos Cement) Products are composed of Asbestos, Fibre and Portland Cement, which, by thorough mixture and compression are united into a homogeneous product possessing the toughness of fibre and the hardness of concrete.

### "DURABESTOS" (Smooth Faced) FLAT SHEETS

#### STOCK SIZES AND THICKNESSES—

"DURABESTOS" is available in five broad sheets. There is one standard thickness in every-day use, viz 2 in. x 4 ft. x 8 ft. (1 in. thick), suitable for exterior walls, interior walls and ceilings.

Non-fire—can be available in each thickness, viz 4 ft. wide by 4, 5, 6, 7, 8, 9, and 10 ft. long  
3 ft. wide by 4, 5, 6, 7, 8, 9, and 10 ft. long

"DURABESTOS" Sheets are made to order in special thick weights comprising: 2 in., 3/16 in., 3/8 in., 1/2 in., and 3/4 in.

#### WEIGHT PER SQUARE YARD—

The approximate weights of "DURABESTOS" are—  
No. 2 (3/16 in. approx.), 14.5 lbs. to the square yard.

#### USES, QUALITIES, ADVANTAGES AND FIXING.—

Externally, "DURABESTOS" is used for lining walls, for glass slings, eaves bulging, balcony panels, etc. In the interior of buildings it is suitable for lining walls and partitions, and for ceilings, etc. "DURABESTOS" is weather, white set, and vermin-proof, fire resisting, hygienic and virtually impervious.

"DURABESTOS" is the most economical, convenient and effective lining available today for all building purposes. It may be sawn like timber, and is nailed to wall studs or ceiling joists with special 1 in. x 14 gauge blunt point galvanised nails. It is usual to apply "DURABESTOS" or timber-cover inside over the joints. To paint "Durabestos," use a recognised brand of Cold Water Paint. If Oil Paint is to be used on newly erected work, first prime the surfaces to be painted with a Turp Oil Cement Primer. Synthetic Paints, obviating the use of primers, are now available from paint manufacturers.

#### "DURABESTOS" COVER MOULDS, ANGLES, ETC.—

"DURABESTOS" (Round-edges) Cover Moulds, 2 in. wide (7/16 in. thick approx.), external Angles, 2 in. wide, and internal Angles, 2 in. wide, are available in lengths of 6, 7, 8, 9 and 10 feet. "DURABESTOS" Horizontal Mouldings, Wall Ventilators, also stocked. Ask for a copy of our illustrated catalog.



N.S.W. Housing Commission "Durabestos" Asbestos-Cement Home, roofed with Wunderlich Terra-Cotta Tiles.

### "DURATILE" (Tile Pattern) SHEETS



#### FIXING—

"DURATILE" can be fixed (1) with Butt Joints, (2) with Metal Joints and Angle Pieces, (3) with "DURATILE" (Asbestos Cement) Cover Moulds and Angles, (4) With "WUNDERBRITZ" (Registered) Painted Aluminium, Joint, Angle and Cap Moulds. Both Metal and "DURATILE" Cover Moulds and Angles are available in lengths of 4, 5, 6, 7, 8, 9, and 10 feet. Samples, illustrated folder, and prices posted on request FREE.

#### PAINTING—

The surface of "DURATILE" Sheets and Cover Moulds is primed with a cement sealer; paint or enamel can be applied in the usual way. For best results, apply at least one undercoat and one, or preferably two, finishing coats. The back of such sheet is sealed against the entry of moisture.

### "INSULABESTOS" SHEETS

"INSULABESTOS" is a double faced sheeting approximately 1 in. thick, comprising a core of highly efficient insulating fibre, faced on each side with 1/32 in. thick "Durabestos."

"INSULABESTOS" is made to order only in sizes of 3 ft. and 4 ft. wide by 3, 4, 5, 7, and 8 ft. long.

#### USES—

"INSULABESTOS" is suitable for fire and vermin-proof and sound insulating partitions, walls, doors, etc. It possesses all the qualities of "Durabestos" and, in addition, is an effective insulator.

### ASBESTOS MILLBOARD

ASBESTOS MILLBOARD is made to order in sheets 3 ft. and 4 ft. wide by 3, 4, 5, and 7 ft. long, also 40 in. x 40 in. square.

Standard Thicknesses are 1/16 inch, 1/8 inch, and 1/4 inch.

Weights per square are—5 oz., 8 oz., and 16 oz.

#### USES—

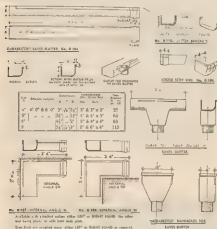
ASBESTOS MILLBOARD is suitable for industrial insulating purposes also for structural installations to Theatres, Picture Houses, etc., where fire resisting treatments to Walls, Floors, Ceilings, etc., are necessary.

HANSARD'S CATALOGUE



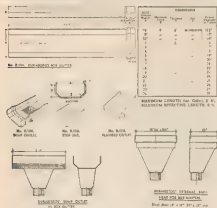


## "DURABESTOS" EAVES GLITTERS



NOTE: Check with manufacturers when writing specifications, as some lines are temporarily unavailable.

## "DURABESTOS" BOX GLITTERS



## "DURABESTOS" LOUVRES, etc.

Particulars will be given on application

## "DURABESTOS" BARGE MOULDINGS



"Durabestos" Barge Mouldings provide an attractive weather-tight finish to gable ends; they are economical in use, are permanent being non-corrosive, and do not require painting.

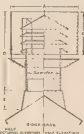
**STOCK LENGTHS.**—4 ft. and 8 ft. Thickness 3/16 in. (Nom.), also made to order up to 8 ft. in specified thicknesses from 3/16 in. Fixed with Collar Lap of 4 in.

**NOTE.**—When ordering Barge Mouldings, give exact pitch of roof to ensure returns finishing plumb, also advise if Barge is Right or Left hand. Mitres are not cut as these can best be made on the job.

## "DURABESTOS" ROOF VENTILATORS (Exhaust Type)

Bases made to order suit pitch of Roof. Also made Right or Left hand in Corrugated Sheets to suit fitting in opposite Roof slopes. When ordering state size of sheet, position of Vent, and whether required for Roof Slopes fixed.—

- (1) FROM RIGHT (Right hand Base)
- (2) FROM LEFT (Left hand Base)



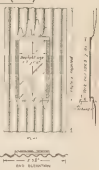
Size	Dimensions			
Span	A	B	C	E
12"	1' 0"	1' 0"	1' 0"	1' 0"
18"	1' 6"	1' 6"	1' 6"	1' 6"
24"	2' 0"	2' 0"	2' 0"	2' 0"

## "DURABESTOS" SKYLIGHTS (Fixed)

Made to order in lengths up to 16 ft. as required with the opening placed as shown, subject to a minimum length of 6 ft. for 6 in. and lap being and surveyed by twice any additional end lap required. Made Left and Right-hand to suit fitting in opposite roof slopes. When ordering, state number required for roof slopes fixed.—

- (1) FROM RIGHT (Right Hand Skylight)
- (2) FROM LEFT (Left Hand Skylight)

**STOCK DAYLIGHT SIZES**  
In DEEP (3 1/4 in.) Corrugated Sheets, 1 ft. 3 in. x 1 ft. 6 in., 1 ft. 6 in. x 1 ft. 6 in. (the latter size fixed in sheet of 1 ft. minimum length).  
In STANDARD (3 in.) Corrugated Sheets, 1 ft. 3 in. x 1 ft. 3 in. and 1 ft. 6 in. x 1 ft. 3 in. (the latter size fixed in sheet of 1 ft. minimum length) Supplied glazed with 1/8 in. wired cast glass or unglazed.

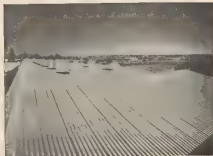


"DURABESTOS" SKYLIGHTS are fixed in a manner similar to "Durabestos" Corrugated Sheets. Ventilating Skylights also available in size in Deep and Standard Corrugated Sheets also available

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For further information, Prices, Samples, Complete Catalogue, Specifications, etc., relating to Deep (5.75 in. pitch) or Standard (3 in. pitch) Corrugated, apply to the nearest Wunderlich Branch Office.

HANSKY'S CATALOGUE



Deep Corrugated "Durabestee" Roofing, Carpet Manufacturers'  
Building, Fivedeck, Sydney  
Architect, Samuel Lapsom Builders, Kell & Rigby



Deep Corrugated "Duralbestos" Wall Siding, Carpet  
Manufacturers' Building, Flinders, Sydney.  
Architect Samuel Lynam Builders Kell & Rigby



Standard Corrugated "Duralbestos" Roofing, Carriers (Aust.)  
Ltd. Building, Sydney  
Architects Budden & Markey, Builders Hutcherson Bros

**CONCRETE  
FRAME  
WINDOWS**

SECTION

**23a**

SECTION

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B. G. PLUMMER'S CATALOGUE

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23a/1

Established 1907

# B. G. PLUMMER & CO.

183 HAY STREET, SYDNEY

QUEENSLAND  
Alexander Anderson  
Heather Street  
Wilton, Brisbane

NORTH QUEENSLAND  
Northern Builders Supplies  
Pty. Ltd.  
Cairns, Babinda, Innisfail.

TASMANIA  
Barranger & Lansdell  
Pty. Ltd.  
Hobart and Launceston

VICTORIA  
T. S. Gill & Son Ltd.  
Ball Street  
EAST PRESTON, N.18

Telephone MA9547

WESTERN AUSTRALIA  
Morris, Scarfe & Sandovers Ltd.  
Hay Street  
Perth



Above. Feature of "Plummer-Crete" Corner Windows, Erskineville Hotel, Erskineville, Sydney.

Right. Entrance Feature of "Plummer-Crete" Windows, H. Pack & Co. Pty. Ltd., Rosebery, Sydney.

Below. Staircase Corner Feature of "Plummer-Crete" Windows, Players' Building, Queen Street, Brisbane.

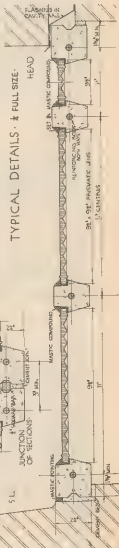


## PLUMMER-CRETE

### CONCRETE FRAMED WINDOWS

Strong and Durable. Handsome in Appearance.  
No Breakage of Glass from Expansion.  
Fire Resisting. Weather Proof. Burglar Proof.  
No exposed iron to rust or paint.

Especially suited to all classes of brick, stone and concrete buildings, either Domestic or Commercial, and when used in conjunction with other features form an effective contrast. They are glazed with sturdy 1/4" thick Prismatic Lenses which give the widest diffusion of light, but if desired, any type of glass, cut to size, can be used.



Each glass in "Plummer-Crete" Windows is an independent unit, bedded in the concrete frames with a mastic compound, which eliminates all possibility of breakage from expansion and should a breakage occur through accident, a new glass can be easily replaced without damage to the concrete frame.

The complete window is made up of a number of sections of a size suitable for handling or shipment, usually a maximum of 24 glasses per section, and can be delivered to the job glazed, or may be glazed after fixing.

The frames may be fixed so that the glazing can be done from the inside or the outside, whichever is preferred.

VENTS.—Louvre Vents made in any metal, or Hopper Vents to open, can be fitted if required.

#### ARCHITECT'S SPECIFICATION

PLUMMER-CRETE WINDOWS, supplied by B. G. Plummer & Co., and formed of 1/4" thick reinforced concrete frames, glazed with 1/4" x 1/4" x 1/4" prismatic lenses, spaced on 1/4" centres, and bedded in mastic putty.

**FLOORING, FLOOR  
COVERINGS, PAVINGS  
and GRATINGS**

SECTION

**24**

SECTION

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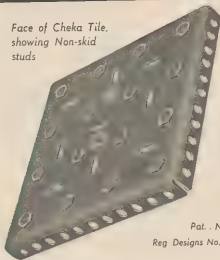
CATALOGUES 1 to 8

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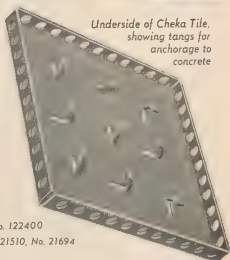
# CHEKA

NON-SLIP  
Steel  
Tiles

Face of Cheka Tile,  
showing Non-skid  
studs



Underside of Cheka Tile,  
showing tangs for  
anchorage to  
concrete



Pat. No. 122400

Reg. Designs No. 21510, No. 21694

CHEKA Tiles are manufactured from  $\frac{1}{2}$  inch hot-rolled steel plate and are approximately 12 inches square. Depth of side flanges, 1 $\frac{1}{2}$  inches. They are made in two types—Plain and Studded. Half tiles of each type are also manufactured for fitting around pipes or odd-sized areas. The Studded Non-Slip Tile, under the most exacting conditions, ensures safety for those walking on the floor, even if the surface is covered with a film of fat, grease, or oil. Positive footing is also given to steel-shod horse traffic, hauling heavy loads.

CHEKA Tiles are particularly recommended for concrete or brick floors in such places as Traffic A-ways, Loading Platforms, in front of Elevators, Banks and Wharves, Driveways, Aprons to Machines or Presses, or wherever traffic is heavy or concentrated.

CHEKA Tiles, when bedded in concrete and laid according to our specifications, will stand terrific wear and tear, and once installed will practically obliterate any further maintenance expense.

Wherever there is likely to be continual dumping, as with milk cans, gas cylinders, steel containers, barrels, and the like, CHEKA Tiles are indispensable. They also resist the abrasive wear of steel-wheeled trucks and are the only floor surfacing that will stand up to the terrific attack of heavy-duty fork lift trucks.

CHEKA Tiles have been used extensively, either for complete floors or for sections, in food processing plants, distilleries, canneries, meat manufacturers, butter and cheese factories, milk depots, bakeries, jam factories, confectionery works, yeast factories, sugar refineries, and they have been enthusiastically endorsed by canister manufacturers, printers and paper mills, glass works, cake manufacturers, gas works, power plants, soap works, railways, docks and wharves, engineering shops, foundries, tobacco manufacturers, and so on.

CHEKA Tile recommendations are based on years of field experience and a wealth of research, and CHEKA Floor Engineers will gladly co-operate with industrialists, Architects and Engineers in solving various industrial floor problems.

## The Masterpiece of Industrial Paving

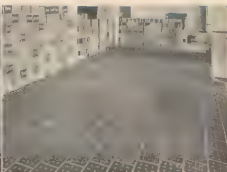
Sales & Technical Service  
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518 Glenhuntly Rd., Caulfield, SE8, Victoria. LF 1597



IN FRONT OF RETORTS

Produces Profitable Production



ON FACTORY FLOORS

Eliminates Endless Expense

## Specifications for the installation of Cheka Steel Floor Tiles

### NEW FLOORS:

The concrete floor is composed of two sections: 1. Concrete sub-base. 2. CHEKA Tile concrete bed. The thickness of the concrete sub-base is dependent upon the weight and the amount of traffic the floor has to carry and should be laid to allow for a minimum 1 1/2 inch concrete bed for the CHEKA Industrial Floor Tiles.

The concrete bedding for the CHEKA Industrial Floor Tiles, which must not be less than 1 1/2 inches in thickness, should consist of one volume part of Portland Cement, two volume parts of clean sharp sand, 1 1/2 volume parts of fine gravel, capable of passing through a # sieve. On no account use coarser gravel, otherwise it will be impossible to tap the tiles into position.

The concrete mix should be plastic, but a little on the dry side; a wet mix must not be used, otherwise there will be difficulty in getting a solid bedding under the surface of the tiles. After the concrete has been poured, screed off to correct level or fall, and then lay the tiles into position with a hammer and, as this is being done, the surplus concrete bedding material should exude through all the holes on the surface of the tiles. If this does not happen, then the tile should be taken up, further bedding material added and the tile retapped into position.

The bedding material exuding through the holes on the face of the tiles can be spread over the surface with a broom, care being taken to see that all the holes and joints are kept filled with bedding material. This surplus material can then be cleaned off with a piece of hessian. When laying the tiles, care should be taken to keep the joints true and even, the surface of the tiles level, and to

see that the tiles are solidly bedded into the concrete. After the tiles have been laid for about six hours they should be covered with wet bags for about three days. The floor can be used for light traffic three days after laying, and for heavy traffic seven days after laying.

### OLD FLOORS:

Where old concrete or brick floors are to be paved with CHEKA Industrial Floor Tiles, the existing floor should be cleaned of all dirt and grease. If a concrete floor, chip surface to form a key between the old floor and the new CHEKA Tile concrete bed. If a brick floor, rake out the joints of brickwork to form a similar key. After the debris has been cleared away and the surface of the floor swept clean, it should be thoroughly wetted until absorption ceases. On no account leave pools of water on the floor. After the floor has been well wetted, apply a thin cement grout composed of 5 parts of cement to 2 gallons of water, which should then be brushed into the existing concrete or brick floor with a stiff broom. On to this pour the 1 1/2 inch concrete bed for the CHEKA Tiles and proceed as directed for New Work.

### SPECIAL INSTALLATIONS TO RESIST THE ACTION OF ORGANIC ACIDS

In Dairies, Milk Depots, Butter and Cheese Factories, Breweries, Jam Factories, Food Canning Plants, or wherever organic acids are in evidence, we recommend that a CHEKA Floor Engineer be consulted and he will advise you the best method of overcoming these problems. We are constantly making successful installations with CHEKA Tiles and Acid resisting Cement where it has been found that cement surfaced floors would not resist the attack of various Organic Acids.



FOR HORSE-DRAWN TRAFFIC

Non-Skid — Non-Slip



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Permanent Protective Paving

# THE COMMONWEALTH FLOOR SURFACING CO.

FLOOR SURFACING, PARQUET AND  
WOOD BLOCK FLOORING SPECIALISTS

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RICHMOND, E.I. VIC.

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2

## WOOD BLOCK FLOORS

Wood block floors of kiln dried and reconditioned timber, tongued and grooved on sides and ends, 1 1/2 in. nominal or any desired thickness, laid in hot bitumen on concrete or

wood sub floors are available in any series 100 pattern—as set out on following page.

### Parquet

Parquet is available in 3 types of any thickness and in a variety of timbers—6 in thickness is standard. The 3 types are (1) secret nailed, (2) planed four sides, and (3) panelled type—the latter in Series 200 pattern provides unlimited scope for special designs in corners or centres. Parquet is laid on wood sub-floors only. In addition to the continuous (Series 100) and panelled (Series 200) patterns an unlimited range of special designs, such as square and hexagon chain and twist, stars, interlaces, overlapping rags, is available.



"OUR LADY OF LOURDES,"  
THORNBURY

### Floor Finishing

Under this heading may be included any of the following:—

- Machine sanding
- Hand scraping
- Sealing
- Liquid filling
- Paste filling
- Steel wooling
- Staining
- Stopping nail holes
- Paste waxing
- Liquid waxing
- Dry waxing

## ARCHITECTS' SPECIFICATION DATA

### Preparation of Sub-Floors

**Solid Concrete.**—Screed off the slab being careful not to "puddle" the mix and slop. Uniformly dust this freshly screeded concrete with a dry mixture of sand and cement in equal proportions. Trowel this dusted surface with a wood float to a uniform level finish without projections or depressions. Adequately protect from injury until "set". Protect from concrete or plaster droppings.

**Screeded Cement.**—As the bitumen in which the blocks are set is but a plastic film, a level foundation is essential for the wood blocks. Unlevel concrete floors must be covered with a topping course of not less than 1 in. thickness, composed of 3 parts sand and 1 part cement, screeded to a uniform level finish, trowelled off with a wood float; such rendering should be securely bonded to the concrete and be free from all drumminess.

**Water-proofing.**—Where the concrete sub-floor is in contact with the ground or where it is below ground level and ventilation proves it liable to condensation, the concrete must be water-proofed, such water-proofing to be additional to the bitumen in which the blocks are set, which is simply a cementing film of no appreciable thickness.

**Wood.**—A sub-floor of wood must be securely nailed and adequately sanded, and, when necessary, must be sanded off to a uniform level finish and all nails planed, such work being included in our quotation only when expressly stated.

### Laying

The Wood Block Parquetry Contractor shall dress the level concrete or sanded floor with a sealing coat to take the bitumen, and the wood blocks shall be dipped in hot bitumen and laid to Commonwealth pattern No. 1 (see pattern sheet next page) leaving (for average sized areas) an expansion joint of 1/4 in. around walls and all vertical features. Doorways to be provided for or fitted with sandies or thresholds.

(For finishing treatment see Floor Finishing Specifications.)

RAMSAY'S CATALOGUE

### Specifications

**Covered Floors, or Stores and Pasteries.**—Floors to be electrically sanded to a uniform level surface, using steel plate around sanding drum of machine to obtain true surface where floors are to be covered with rubber or other highly polished covering.

**Halls, Churches, Verandahs.**—Floors to be electrically sanded to a smooth, level surface, and then given one coat of penetrating hard drying liquid filler; nail holes to be stopped with matched putty, and floors to be finally polished with paste wax and electric polishing machine.

**Residential.**—Floors to be electrically sanded to a smooth level surface and then given one coat of hard-drying oil stain, which will not raise the grain, of shade to be selected. Nail holes to be stopped with matched putty and floors to be finally polished with wax and electric polishing machine.

**Utility Floors Non-Slip.**—Floors to be electrically sanded to a smooth level surface; sealed, and steel trowled to smoothness again.

**Floors Used Exclusively for Dancing.**—Floors to be electrically sanded to a uniform level surface and then furnished with sanding machine, using dry wax.

## NOTES

Colour in a floor is best obtained by choice of timber, e.g. Blackwood, Jarrah, etc. Stained floors do not wear as well. When staining is unavoidable, lean toward the lighter shades—they wear better, show dust and footmarks less and brighten a room. Very dark stained floors never look well for long because of dust and rapid wear.

Floors for dancing can be made fast by a good quality powdered wax, and if too fast, can be made slower with salt or soap powder used very sparingly.

For living rooms occasionally used for dancing, parquet with rugs provides for appearance and service under both conditions with moderate outlay.

Parquet can be laid over an existing floor without difficulties due to different floor level by using tapered sandies or thresholds in doorways.

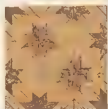
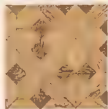
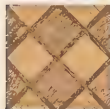
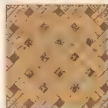
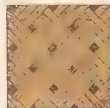
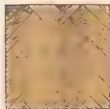


# THE COMMONWEALTH FLOOR SURFACING CO.

## WOOD BLOCK and PARQUET PATTERNS

(Series 200 Patterns on Wood Sub-floor Only)

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217

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Manufacturers of:

Roman Mosaic, Terrazzo, Ironite and Granolithic Flooring  
also Steps, Nosings, Dadoes, etc.

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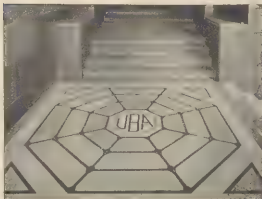
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## The Firm

The firm of De Marco Bros. is the oldest and largest flooring specialists in Victoria. The long experience of this firm and their skilled tradesmen, under competent direction, enables De Marco Bros. to carry out the largest and most intricate jobs in Melbourne, to the entire satisfaction of architects and owners.

Floors laid by De Marco Bros. are undoubtedly equal to any done on the Continent or in America.



## Recently Completed Jobs:

Bank of N.S.W. 246 Collins St., Melbourne.  
Regent and Plaza Theatres, Collins St., Melb.  
City Savings Bank (Head Office), 129 Elizabeth St., Melb.  
Myer Emporium Ltd., Bourke St., Melb.  
Mutual Store Ltd., 255 Flinders St., Melb.  
Foy & Gibson Pty. Ltd., Bourke St., Melb.  
Capel Court, Collins St., Melb.  
Majestic Theatre, Melb.  
General Motors- Holden New Plant, Ft. Melb.  
Over 40,000 sq. yds. of Granolithic paving.

## SCHEDULE OF PAVINGS AND FLOOR FINISHES

(IN ORDER OF THEIR RELATIVE COSTS)

Kind	Description	Use	Recommendation.
Screeded Concrete	A mixture of bluestone screenings, sand, and portland cement, finished fairly level with a wood float.	For the foundation or base to finished floor surfaces. Temporary paving.	4-2 1/2 inch laid in blocks 12 ft square.
Dust Finish	As above—but finished steel trowelled to a smooth surface after the addition of a mixture of bluestone dust and portland cement.	For ordinary factory floors, paths, garages, etc.	Equal parts of bluestone dust and cement for finishing, base of 4-2 1/2 inch.
Granolithic	A 1/2 in. (or 1 in.) thick wearing surface for concrete bases. Available in standard colours.	For finished floors of factories, etc.	Three parts of bluestone topings to 1 part of cement finished with a mix of 1 to 2 bluestone dust and cement—and steel trowelled.
Ironite	Actually a granolithic floor in which ironite is used as part of bluestone topings.	For floors subject to heavy traffic—but a hard long-wearing surface.	Same specification as above—substituting "ironite" for bluestone in each case.
Florite	A composition flooring with slight tensile properties may be laid on wood or concrete base—available in standard colours.	For offices, restaurants, bath rooms, kitchens, etc.	Laid in 1 course of 1/2 in. thickness.
Terrazzo	Marble chips set in cement (white or grey) and polished.	For decorative floors in entrance foyers, shops, bathrooms, etc. also in docks and partitions.	Minimum thickness 2 inches—1/2 inch laid on base of 4-2 1/2 inch.
Mosaic	A floor consisting of small stones individually cut and set by hand to predetermined design.	For entrance ways and churches.	Thickness 1/2 inch

RAMSEY & CATALOGUE

FINE WORK BY PICTON HOPKINS &amp; SON PTY. LTD., SHOWS—

## The Beauty of Terrazzo

Specialists in the installation of Terrazzo, Mosiac, Granolithic, Iron'se, concrete and composition paving we have been chosen by leading Architects and builders for work on the following outstanding Melbourne buildings.

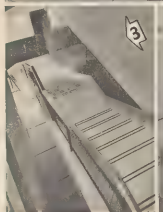
1. London and Lancashire Insurance Co. Ltd. Architects: A. S. and R. A. Eggleston. Showing Terrazzo entrance paving, cream base with mixed variety of coloured marble. Each square is divided by 1" brass strip with black Terrazzo margin. Ideal for hard wearing, modern effect for buildings with heavy foot traffic.
2. Heidelberg Military Hospital. Architects: Leighton, Irwin & Co. Terrazzo floating floors of operating theatres and sterilization rooms will not crack, therefore remain hygienic and easily cleaned. Floating floor, not being bonded to main concrete base, does not reproduce cracks or flaws.
3. London and Lancashire Insurance Co. Ltd. Architects: A. S. and R. A. Eggleston. Terrazzo staircase laid in situ featuring carborundum non-slip inserts. Note also Terrazzo internal and external staircases and curbing. Terrazzo staircases are hard wearing and easily cleaned.
4. Nurses' Quarters, Children's Welfare Dept., Royal Park, Melbourne. Showers, undressing cubicles and bathrooms, all of pre-cast Terrazzo. Note: Wall dados of 1½" thickness and specially designed chrome plated fittings. Terrazzo bathroom floors and divisions are the easiest to keep clean.
5. Teachers' Training College, Melbourne University, designed by Public Works Dept. Lavatory block of pre-cast Terrazzo divisions, fascias and lintels. Note chrome plated door hinges and stops specially designed for this work. Divisions are only 1½" thick, permitting greater number of cubicles to allotted space.

★ For further information concerning the latest overseas ideas and developments of Terrazzo work of all types ring or write and a highly skilled representative will call.

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**LIGNOLEO JOINTLESS FLOORING**—Lignoleo is a jointless wood pulp flooring laid by skilled workmen in a plastic state,  $\frac{1}{8}$  inch thick, beaten in and allowed to set, which takes from ten to twenty-four hours. After sanding the floor is saturated with Lignoleo Oil and polished.

Lignoleo can be laid in a good range of colours on either wood or concrete; is attractive in appearance, pleasant to walk on, being warm and resilient to the tread, and stands up to heavy wear.

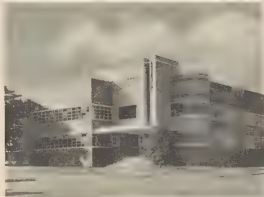
Floors of old buildings may be reconditioned with Lignoleo, obviating the necessity of replacement.

Lignoleo is a sound-proofing medium, being suitable for Flats, Factories, Offices, Showrooms and Hospitals.

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## SPECIFICATIONS

**FLOORS**— $\frac{1}{8}$  inch Lignoleo Jointless Flooring (colour to be selected) —concrete to be level, but not smooth—rendering to finish.

**STAIRS** Treads, Risers, Stringings, Stringers, Landings— $\frac{1}{8}$  inch Lignoleo Jointless Flooring (colour to be selected) concrete as above.



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RESILIENT . HYGIENIC . DURABLE

RAMSAY & CATALOGUE

# "LINOTOL" PLASTIC FLOORING

Sole Manufacturers and Contractors:

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## MODERN PLASTIC PRODUCTS PTY. LTD.

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"LINOTOL" is a cellulose fibre-cork plastic laid *in situ* on the job without joints. It forms an exceedingly tough, durable floor capable of standing up to the most arduous conditions such as exist in many factories. It is fireproof, dustless, hygienic, and is approved by the Public Health Department for female workers, being warm and pleasant underfoot. "LINOTOL" flooring eliminates the fatigue experienced by workers standing and working all day on most other types of floors. Besides the actual and practical benefits to health obtained by the employee when working on "LINOTOL," there is a psychological effect

which makes for contentment and satisfaction in knowing that something has been done by the employer for his special benefit.

"LINOTOL" can be laid on old and worn or new timber and concrete floors in several different colours. In general, it is an ideal floor for industry in every respect.

There are very few conditions under which "LINOTOL" will not prove satisfactory whether in office, factory, mill, workroom, laboratory, showroom, public offices, schools, hospitals, laundries, etc. It is laid half-an-inch thick,

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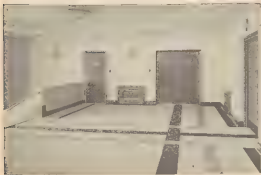
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In the home rubber flooring is the ideal covering. Warm and soft to the tread it is designed to suit every bathroom, kitchen and toilet and can create quiet harmony with any decorative or utility scheme. Entrance halls, public buildings, hotel bars, lounges, lifts, cafes, counters, etc. We measure, quote and offer you our technical advice free for your guidance.



#### SUPERTEX PLASTIC COMPOUND.

This is a proved pre-war ornamental rubber terrazzo laid in plastic form to brick, concrete, asphalt, stone, metal or timber floor. In all colours and designs. Used by H.M. Navy and H.M.A. Navy during the war. Enquire about this modern and proved flooring.





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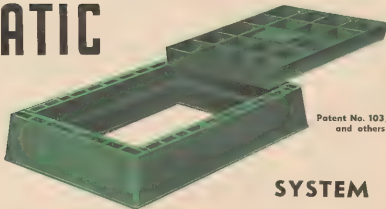
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*Manufacturers of*

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# GATIC



Patent No. 103,610  
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## SYSTEM

## OF MANHOLE COVERS AND GRATINGS

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## MANHOLE COVERS AND GRATINGS

IN the progress of engineering throughout the world in recent years, GATIC manhole covers and gratings have fulfilled an essential part, because their unique and patented design has established their definite superiority over any other type, and proved their claim to be the last word in equipment for manhole, pit, or trench openings.

The extensive use of GATIC products in Great Britain and other countries, and the ever-increasing demand since their manufacture in Australia, is evidence of the keen appreciation of their outstanding merit by Engineers, Architects, Government Departments, Councils, Public Bodies, and various industries.

GATIC is a system of distinction and merit, and is a definite contribution to standardization in building and engineering construction. A careful study of the following will reveal the excellent features in the design and operation of GATIC, and the manifold advantages to be gained from its use.

The design of GATIC covers, gratings and frames is metallurgically and mechanically correct. Precision patterns and the "Elkington" patented process ensure that GATIC castings in their "as cast" condition are substantially stress free, and that the "as cast" accuracy practically equals machine tool finish.

The design of the cover is such that its peripheral contour A, B, C (Fig. 1), in addition to its horizontal base seating C, D, fits within and upon the corresponding enveloping surfaces E, F, G, K, of the frame, thus establishing correct metal-to-metal register throughout, so that the interposition of a thin grease film, preferably containing graphite, creates water and gas tight contact.

This degree of contact is indefinitely maintained because the initial stress-free condition of the castings ensure permanency in the shape of a cover or grating and its frame, and both being subject to the same variations of ground temperature, they expand and contract as one unit.

This permanent contact between a GATIC cover or grating and its frame ensures that they are substantially one solid unit, which in the case of road covers, even if they are ventilated, or gratings, is essential in order that



Fig. 1



Fig. 2.

fast moving traffic shall not develop cover movement. In other words, GATIC covers or gratings are permanently non-rocking (Fig. 2.)

## IMPORTANT.

As no movement occurs between the cover or grating and frame, wear cannot develop on the seating surfaces, and the customary replacement of covers is therefore unnecessary.

British Government contracts contain the following clauses:

Clause 2. "The seating surface of all manhole covers shall make a water and gas tight contact with their respective frame seatings, when and if such surfaces be clean and a film of thick grease or plastic bitumen is interposed between them (any surplus being removed by wiping with a cloth)"

Clause 3. "The extent of the metal-to-metal contact of all covers and their respective frames will, however, only be deemed sufficient when, and if, a 10/1000ths of an inch standard steel feeler cannot be passed anywhere between them."

GATIC covers and frames conform to these conditions

## BRIEF SPECIFICATIONS.

GATIC covers, gratings and frames consist of high-grade cast iron, and are of cross webbed cellular construction, to be filled and trowelled smooth—with concrete on the site. A stabilizing fit between cover or grating and frame is obtained by a taper contact on the sides, an "undercut" and "draw-cut" contact at reverse ends, and a metal-to-metal contact of 8/1000—10/1000 of an inch register.

These details in design and construction extend throughout the system, in single units and multiples, for pits, trenches and cable or pipe ducts.

The strength of the GATIC design is obvious. Stress-free cast iron covers, adequately cross webbed, reinforced with concrete, rigidly confined and horizontally supported, cannot stretch or deflect under specified loadings.

## MANHOLE COVERS AND GRATINGS



### OPENING AND CLOSING

(See illustration at left)

Irrespective of size, type, length of time they have been in position, or the loads to which they have been subjected, the removal of GATIC covers offers no difficulty.

Special keys provided for the purpose make this operation easy.

Having cleared the lifting keyholes, the operator inserts the keys, gives them a quarter turn and lifts the cover to clear the frame, when the cover will slide out.

If the cover has been closed for some time, insert the keys as above, tighten holding down nut to secure key body to the cover, then screw down set screws alternately, when the contact will be broken. The cover can then be raised and drawn out. The whole operation takes not more than two minutes to break the contact, as the leverage exerted overcomes a resistance of 3 tons for each key or 6 tons for two keys in use.

Closing is merely a matter of sliding the cover into position.

### IMPORTANT.

The use of special keys makes unauthorised opening of the cover virtually impossible.



TRENCH GRATING

When a concentrated deadload has been (for the purpose of test) deliberately applied upon the central area of a GATIC cover and progressively increased, it is the cover which has ultimately failed, whilst its frame remains intact and unaffected.

The resultant force, even in such exceptional circumstances, appears to act so very nearly vertically downwards that any internal action tending to burst the frame is negligible. Consequently, there is no need for special concrete surrounds. GATIC covers, gratings and frames may be laid in any roadway and surrounded with normal road material.



TRENCH COVER

© LIMEAY & CATALOGUE

# THE GATIC<sup>SYSTEM</sup>

## MANHOLE COVERS AND GRATINGS



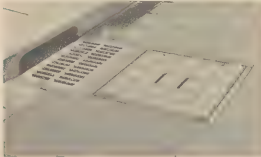
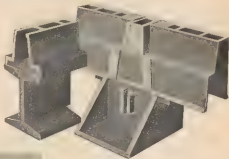
### Installation of "Gatic"

#### INSTRUCTIONS

**Foundations:** As shown under "Dimensions," frame bar depths are: Types B and C, 6 in.; Type E, 1½ in. A clearance of at least ½ in. for B and C, and ¼ in. for E, should be allowed between the base of the frame and foundation for adjusting levels.

**Assembly:** The cover or grating should be placed within its frame on clean foundations. The assembly can then be adjusted to correct alignment and finished surface levels. This is most readily done by the use of packing pieces of suitable material inserted under each joint of the frame. In all cases—with the exception of single covers or gratings—lateral spreading of the frame should be prevented by clamping or wedging the frame to its cover or grating.

If correctly "set up" there should be no rocking movement of the cover or grating in its frame.

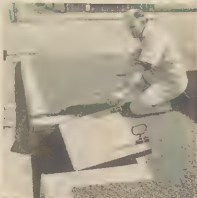


Should rocking occur, it will be found that one corner of the cover or grating will be rising above the top of the frame. By increasing the packing under the frame at this point, thereby bringing the horizontal seatings in contact, the rocking movement will be eliminated.

**Grouting and Filling:** The frame may now be grouted to the foundations and, if desired, the cover may be filled at the same time, trowelling all concrete to a smooth finish. Precautions should be taken to prevent the key holes being filled with concrete, by plugging with greasy waste. The cover or grating should, under no circumstance, be removed until the grouting in the frame has set.

## SIZES AND SAFE LOADINGS

Clear Opening	Road 16 tons Fast	Heavy Truck 4 tons Fast 10 tons Slow	General Yard 12 tons Fast 16 tons Slow	Heavy Lard and Pavement 20 tons Fast 24 tons Slow
8" x 8"	-	-	E	E
8" x 12"	-	-	E	E
12" x 12"	C	C	E	E
18" x 12"	C	C	E	E
18" x 18"	C	C	E	E
18" x 24"	C	C	C	E
24" x 24"	B	C	C	E
30" x 24"	B	C	C	E
30" x 30"	B	C	C	E
18" x 36"	B	C	C	E
36" x 24"	-	B	C	E
36" x 30"	-	B	C	E
36" x 36"	-	B	C	E
42" x 42"	-	B	C	E



## TRENCH COVERS AND FRAMES

Type		Clear Opening
E	Medium	6" Span
	Medium	9" Span
	Light	12" Span
	Light	15" Span
	Light	18" Span
	Light	24" Span
C	Heavy	30" Span
	Heavy	12" Span
	Medium	18" Span
	Heavy	30" Span
B	Heavy	15" Span
	Heavy	24" Span
	Heavy	30" Span

TRENCH GRATINGS AND  
FRAMES

Type		Clear Opening
E	Heavy	4" Span
	Heavy	6" Span
	Medium	9" Span
	Medium	12" Span
	Medium	15" Span
	Light	24" Span
C	Heavy	4" Span
	Heavy	6" Span
	Heavy	12" Span
	Heavy	24" Span
B	Heavy	9" Span
	Heavy	12" Span

GULLY GRATINGS AND FRAMES  
(HINGED OR SLIDE-IN)

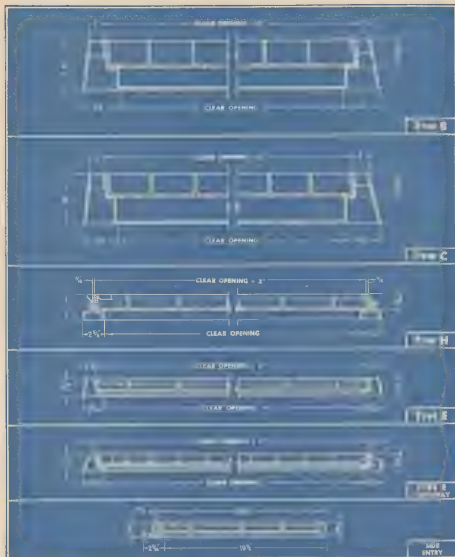
Type		Clear Opening
E	Heavy	18" x 9 1/2"
	Medium	18" x 12"
	Medium	18" x 18"
	Medium	24" x 18"
	Medium	24" x 24"
C	Heavy	24" x 30"
	Heavy	18" x 17"
	Heavy	30" x 16"

Type		Clear Opening
E	Light	24" x 19 1/2"
	Light	36" x 19 1/2"

The limited space available in this publication does not permit a full description of our entire range of Manhole Covers, Gratings and Special Applications. Our Technical Staff are available to advise on any relevant problem confronting architects and engineers.

## DATA SHEET—DETAILS OF TYPES B, C, H, E, E (cut-away) and Side Entry



**PLASTERING,  
FIBROUS PLASTER  
and  
PLASTER PRODUCTS**

SECTION

**25**

SECTION

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CATALOGUES 1 to 5

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BLUE BOOK  
OF  
GYPSUM PLASTERING PRODUCTS

# VICTOR PLASTERING PRODUCTS

## YOUR GUARANTEE

Products bearing the registered trade name of "Victor" and "Waratah" and patent numbers of Australian Plaster Industries Pty. Ltd. are backed by a guarantee of experience that only 30 years of continuous manufacture can give. This experience, coupled with rigid inspection and testing of materials during each stage of production, from the selection of raw materials to the finished product, assures the highest quality.

The names VICTOR and WARATAH are synonymous with the highest quality gypsum plasters.

## MANUFACTURED PRODUCTS

The building industry utilizes Gypsum in many forms, particulars of which may be obtained by consulting the products indexed under the following headings:—

FIBROUS PLASTER  
GIRDER CASINGS  
HOLLOW FLOOR BLOCKS  
GYPSUM CEMENT  
SPECIAL HARDWALL PLASTERS  
ACOUSTICAL CORRECTION PLASTERS

This wide range indicates the research that has taken place in connection with the manufacture of Gypsum products. Such research necessarily indicates a thorough knowledge of the use of Gypsum. Other products manufactured by this Company are:

WARATAH KALSOMINE  
WARATAH MILL WHITE

Particulars of these are given in Section 27 of this Catalogue.

## DISTRIBUTION

High grade superior products are only useful to the building industry if their marketing and distribution is undertaken on lines that will guarantee first-class products being available to all builders at instant notice. The Head Office of the Company in Melbourne arranges supplies for Victoria and Tasmania, while Branch Offices in Sydney, Brisbane and Adelaide supply the States in which they are situated. All Victor products are available from Lime and Cement Merchants in these States.

## SERVICE FACILITIES

Sales offices in each State afford adequate service facilities for products manufactured by Australian Plaster Industries Pty. Ltd. A telephone call to any office will bring a service representative to help you with your building problem.

## DATA ON GYPSUM PLASTER

Gypsum, chemically, is hydrous calcium sulphate  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ . Deposits are located throughout Australia in crystal and rock formation. The gypsum is washed, crushed and ground before being calcined. This process drives off the water of crystallization, forming plaster of paris the base of all Victor products. When mixed with water the plaster of paris re-crystallizes or sets, re-absorbing the water driven off during calcination.

## WHY GYPSUM PLASTERS ARE USED FOR RENDERING, FLOATING AND SETTING

**FIRE RESISTANCE.**—Before Gypsum will permit high temperatures to pass through it, its crystalline rock structure must be destroyed by the removal of its balanced hydrogen-oxygen content in the form of free water. This is a slow process, hence the protection it affords as a fire retardant either in the form of a rendering coat on brick or concrete walls, and Victor Gypsum lathing, or as a fibrous plaster sheet on framed walls.

**ADHESION.**—Adheres well to all approved plastering surfaces.

**MIXING.**—Easily mixed—directions in each bag  
**RAPID SETTING AND DRYING.**—Sets in two to six hours and dries out rapidly, as it chemically re-absorbs 15 per cent. of its own weight in water when setting.

**FLEXIBILITY AND STRENGTH.**—Its exceptional adhesiveness greatly increases structural stability, yet it retains sufficient flexibility to take up slight structural movement.

**NO ACIDS OR ALKALIS.** Gypsum plasters contain no acids or alkali to affect paints.

**NO SHRINKAGE.** Gypsum plasters are unique, as they do not shrink or crack.

**PLASTICITY, RICHNESS AND SLIP.**—Victor plasters have been developed for the convenience of plasterers, the result being exceptional richness and slip. They work more easily at the mortar box, go on much quicker, spread much further, so that plasterers can do a better day's work with less labour.

**UNIFORMITY.**—Uniformity of A.P.I. gypsum plasters is assured by constant checking throughout each stage of manufacture by qualified chemists.

# SPECIAL PLASTERS

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## GYPSUM CEMENT (Fibred and Unfibred)

### DESCRIPTION AND USE

Victor Gypsum Cement consists of a gypsum plaster which is supplied either neat or with fibre added; it is necessary to add sand on the job. It may be used for all rendering and floating work; for pricking up on lathing it is supplied fibred. Gypsum Cement mortars may be applied to any normal plastering base, and they are particularly suited for use in connection with Victor Perforated Gypsum lathing, which is described later in this catalogue—in fact, it is the only material suitable for plastering on such a base.

### ADVANTAGES

Gypsum Cement gains the approval of plasterers because of its quick setting and drying qualities, permitting them to follow up with the next coat much sooner than with other rendering coats, thus effecting a great saving in time. It costs no more than other plasters, and in its fibred form it is ideal for lath work because the fibre is evenly distributed with mechanical mixers. Plaster composed of Gypsum Cement and sand is unique in that after being applied it remains inert and does not expand or contract even when subject to fire. Its adhesion properties are high and for this reason it is superior to other cements when applied to smooth surfaces.

### MIXING

The mixing of Gypsum Cement and sand should be considered in the light of its setting time; being fairly quick setting, only sufficient material should be mixed for approximately 1½ hours' work. Mixing should be done preferably in a trough that has been thoroughly cleaned out after each previous mix. The importance of keeping the mixing equipment clean cannot be overstressed. Set, or partially set, material remaining on or in the equipment acts as a powerful accelerator on succeeding batches; thorough cleanliness of all equipment is essential before commencing to mix a fresh batch.

A mechanical concrete mixer may be used for the mixing operation; the following cycle of operations should be followed:

Put in approximate amount of water.

Add approximately half amount of sand.

Add all the Gypsum Cement.

Add remainder of sand.

Mix for not less than one-half minute, adding water if required to bring to proper consistency.

Dump the entire batch and use.

If hand or trough mixing is employed, the plaster and sand should first be mixed dry to a uniform colour, then bond into the water immediately and thoroughly mixed to the proper consistency. Before commencing to mix a new batch the lathing trough or board should be thoroughly cleaned of all set or hardened material which would affect the setting time of the new batch to be mixed. It is essential that all sand for plaster being used be free from dirt, clay and other foreign matter.

### APPLICATION

For really good work the minimum finished thickness of plaster over all types of surfaces should be over one-half inch. Plaster of lesser thickness is liable to be cracked by slight movements that occur in most buildings. It has been found that plaster one-half inch in thickness has a tensile strength value 83½ per cent. higher than plaster three-eighths inch in thickness.

## COVERING CAPACITY

Is to a large extent determined by the surface to which the material is being applied and the type of sand being used. The following information will serve as a guide for the preparation of material quantities.

Rendering on brick: 3 part sand 1 part cement—275 yds. per ton.

Pricking up on lath: 2 part sand 1 part cement—180 yds. per ton.

## VICTOR SAND FLOAT FINISH

### DESCRIPTION AND USE

Victor Sand Float Finish is a ready mixed product, providing architects and builders with a material for internal finishing that produces a uniform sand finish. The sand used in the material is processed and screened so that the resulting surface will be a medium sand finish, "off-white" in colour. It is ideal for use in all instances where a sand finish wall surface is required.

### ADVANTAGES

Uniformity of gauge assures first-class results with a uniform surface finish, the result of mechanical screening of the sand. Its off-white colour will permit easy covering with delicate tints of Waratah kalsomine, flat paint or enamel. Ready mixed and requiring only the addition of water, it is economical to use. It will not shrink or develop surface cracks.

### PACKAGE

Packed in 112 lb. sealed bags.

## COVERING CAPACITY AND SPECIFICATIONS

See table for covering capacity and master specification for mixing, etc.

In the form of a skim coat not more than ⅜ in. thick, one ton of Sand Float Finish will cover approximately 500 sq. yds.

## VICTOR HARD FINISH

### DESCRIPTION AND USE

Victor Hard Finish is the most sanitary hard wall finishing plaster manufactured. It is made from pure gypsum and is free from any impurities that may affect decoration. Victor Hard Finish is used for endoes and other places where a hard wall surface is required, and where heavy wear is required, or where painted decoration is to be applied over the finished wall. It may be gauged with lime putty where a softer surface is required, but we recommend Victor Setting for this class of work.

### ADVANTAGES

Victor Hard Finish used neat produces a hard surface like Keene's Cement. When used neat it forms an ideal base for the application of wallpaper, flat paint, enamel or lacquers. Victor Hard Finish does not shrink or crack and adheres well to any surface.

### PACKAGE

Packed in 112 lb. sealed bags.

## COVERING CAPACITY AND SPECIFICATIONS

See table for covering capacity and master specification for mixing, etc.

Applied in the usual skim coat, one ton of Victor Hard will cover approximately 550 sq. yds.

## SPECIAL PLASTERS

### VICTOR SETTING

#### DESCRIPTION AND USE

Victor Setting is a machine-mixed product incorporating the correct proportion of plaster of paris and properly slaked and processed lime. For white setting work it supercedes all job-mixed settings. It may be applied on any normal plastering base. A sealing coat is recommended where paint is to be applied over Victor Setting. Where immediate painting or wallpapering is required, we recommend neat Victor Hard Finish.

#### ADVANTAGES

Its uniform mixing assures easy application. It sets within a few hours and possesses great density. Considerable time and labour is saved, as it is ready for use on the addition of water; large or small quantities may be gauged as required.

Guaranteed not to blow (if used from the bag), as the lime content is properly water slaked and processed before being added to the plaster.

#### PACKAGE

Packed in 100 lb. sealed bags.

#### COVERING CAPACITY AND SPECIFICATIONS

See table for covering capacity and master specification for mixing, etc.

Applied in the usual skim coat, one ton of Victor Setting will cover approximately 550 sq. yds.

### WARATAH HARDWALL PLASTER

#### DESCRIPTION AND USE

Waratah Hardwall Plaster is a ready mixed product manufactured to meet a growing demand for a material that may be easily applied and finished while requiring only the addition of water to make it ready for use.

This material will automatically eliminate job admixtures of Lime and Plaster that are not entirely satisfactory.

#### ADVANTAGES

Waratah Hardwall Plaster produces a hard surface that is ideal for Kitchen and Bathroom walls above dadoes of Victor Hard Finish. Waratah Hardwall provides an ideal base for all classes of decoration in the form of enamel and paint; we recommend, however, that a coat of sealer be applied before any such decoration is applied.

#### PACKAGE

Packed in 112 lb. sealed bags.

#### COVERING CAPACITY AND SPECIFICATIONS

See table for covering capacity and master specification for measuring, etc.

Applied in the usual skim coat, one ton of Waratah Hardwall will cover approximately 550 sq. yds.

### VICTOR ACOUSTIC PLASTER

#### DESCRIPTION

Victor Acoustic Plaster is a ready-mixed product composed of indestructible minerals, compounded so that with the addition of water the material is ready for application to the surface to be treated. It may be applied to any surface that provides a firm base for the material after that surface has been prepared as described later. Victor Acoustic Plaster is for use when conditions exist which only require a low co-efficient of absorption, or where the cost of more efficient correction is prohibitive.

#### ADVANTAGES

The main advantages of Victor Acoustic Plaster are its easy application, low first cost and pleasing appearance. (It is not unlike a coarse sand finish, the colour being off-white.)

#### PACKAGE

Packed in 100 lb. bags (approx.).

#### COVERING CAPACITY AND SPECIFICATIONS

Victor Acoustic Plaster should be applied over solid surfaces only after they have received a rendering coat of three parts clean coarse sand with one part of gypsum cement, followed by a thin bonding coat of Victor Setting. The acoustic plaster is applied to this in a  $\frac{1}{2}$  in thick coat and finished with a wood float. The covering capacity is shown in the accompanying table.

The covering capacity when applied not more than  $\frac{1}{2}$  in. thick is approximately 5 sq. yds. per bag.

#### ABSORPTION

Victor Acoustic Plaster has a co-efficient of absorption varying from .30 to .33 for  $\frac{1}{2}$  in. thickness.

### PATCHING PLASTER

#### DESCRIPTION AND USE

Victor Patching Plaster is the finest material obtainable for filling cracks or holes in plastered walls. It is uniform in quality and colour, works easily and goes further and is quickly applied. Especially adapted to the repairing of old work preparatory to refinishing, with colours or papering.

#### ADVANTAGES

As the set is regulated to permit easy spreading and proper drying without shrinkage cracks, it supplies a hard, strong surface without discoloration, withstands wear and tear, and takes paint, kalsomine, wallpaper, or "Victortex" like a new wall.

#### PACKAGE

Supplied in convenient 11 lb. and 5 lb. packages.

# SPECIAL PLASTERS

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## PLASTER OF PARIS

### DESCRIPTION AND USE

Victor or Watauh Plaster of Paris is the basis of all plaster products, variation between different products being produced by controlling the setting time or degree of fineness of the finished material.

Ordinary plaster, which is a general utility plaster manufactured for and used extensively by the Fibrous Plaster trade, may be used for the production of Fibrous Plaster sheets, ornamental cornices and mouldings of Fibrous Plaster and the running of mouldings and general solid plastering work in buildings. This is the cheapest type of plaster made and should not be confused with the special plasters produced for specific jobs.

Special plasters available are listed separately together with a brief outline of their uses.

### ADVANTAGES

Being a quick setting plaster, this material when used in conjunction with lime putty is the essential ingredient which provides an initial set and prevents the slow setting lime from shrinking. The failure to use the proper amount of plaster is the cause of most failures on lime putty finish jobs.

### PACKAGE

This plaster is packed in 112 lb. bags for the general plastering trade and in special larger bags for the Fibrous Plaster trade and run work.

### RUN WORK

Solid plasterers today are seldom called upon to execute what is known as solid run work, as this has been replaced to a large extent by precast Fibrous Plaster mouldings; alterations to existing public buildings, however, quite often demand that such work be carried out; in such case it is suggested that the following specification be followed:

Furring should be fixed and supported off brackets where required to allow for a body of at least one inch of stuff to form the mouldings. Mouldings shall be run in three coats composed as follows:—

### PRICKING UP

Five parts of the following mix:—

Sand 3 parts, lime putty 1 part, and 6 lbs. of hair to each bag of lime shall be mixed with one part of ordinary plaster and applied to the furring.

### FLOATING

Five parts of the following mix

Sand 3 parts, lime putty 1 part, shall be mixed with one part of ordinary plaster and applied over the pricking up and run to within ¼ in. of the contour of the finished surface, making provision for undercuts where necessary.

### SETTING

Not less than one-quarter of setting stuff consisting of 2 parts of lime putty and 1 part of ordinary plaster shall be applied over the floating and finished with a mould properly horsed up to give a smooth clean surface.

## VICTORTEX

### DESCRIPTION

Victortex is a decorative plaster finish manufactured in dry powder form and simply requires mixing with cold water to prepare it for immediate use. It may be applied to any base coat; when mixed it is spread evenly over the wall surface with a trowel or brush and manipulated with brush, sponge, piece of hessian or any implement suitable in order to develop the textured or relief effects desired when dry.

Suitable colours are then applied and blended together to form the desired decorative coloured effect. Any number of colours may be employed; setting results in 13 to 24 hours.

To complete the work, a finishing coat of flattening oil, glazing liquid, or clear lacquer is applied to bring out the textures and colour values and also to provide a washable protective coating.

### ADVANTAGES

Victortex supplies a pleasing departure from the usual flat surfaces. An unlimited range of decorative effects in both texture and colour is obtainable.

Victortex is easily mixed and applied, and requires limited practice to secure excellent results.

It may be applied over plaster, clay tile, brick, concrete, wood, gypsum blocks or any solid surface that provides a firm base.

Victortex provides a permanent surface to withstand the usual wear and tear that a wall finish is subjected to.

### PACKAGE

Packed in 80 lb. canvas bags.

### APPLICATION

**MIXING.** Put water in box first 5 to 6 gals. of water to the 80 lb. bag. Let soak for 15 minutes. Mix thoroughly. Add more water, if necessary, to bring to a creamy consistency. Mix only enough for 14 hours' use. Do not re-temper after material has set.

**COLOUR.** Tinted effects may be obtained by adding lime-proof colours. Use extreme care to reproduce the same colour in successive batches by accurate gauging of amount of colour and water and thorough mixing.

**APPLICATION.**—Apply in two coats over half dry walls. First apply a thin coat well ground into base and allow to draw a few minutes. The second time over, lay the material on level and work it into the desired texture.

### COVERING CAPACITY

An 80 lb. bag of Victortex should cover about 20 to 25 square yards of surface, depending on the type of texture used, condition of base, etc.

# PLASTERING FAILURES AND EFFECTIVE CURES

Plastering failures are not easy to diagnose; however, close observation of the following conditions when inspecting the work will give a good idea of the cause of failure

## HARDNESS

Surface hardness will indicate the composition of the material, i.e., the comparative amount of lime and plaster in the mix or whether the plaster has dried out too quickly; excessively soft spots on the surface will indicate the latter, all over softness indicating excess quantities of lime in the mix.

## COLOUR

An almost pure white wall will indicate the use of a large quantity of lime in the finish coat; whilst patchy white areas indicate too rapid drying conditions. An off white wall indicates that only a small quantity of lime was used on the job.

## CHALKINESS

A fairly high lime content is indicated when a white chalky film adheres to the fingers after a piece of the plaster has been crumbled between them

## DRY OUTS

Dry outs leaving areas of patchy white soft material are caused by applying the material to surfaces that have been insufficiently wetted down prior to the application of the plaster. Wetting down the affected areas with a fine spray at frequent intervals will help to harden the surface.

## SLOW SETS

Caused by impure sand and water; usually remedied by the addition of alum to the mixing water or additional lime to the mix.

## QUICK SETS

Caused by mixing material in containers that have not been properly cleaned, and the use of mixing water in which plastering tools have been washed. The remedy for this trouble is obvious.

# COVERING CAPACITIES

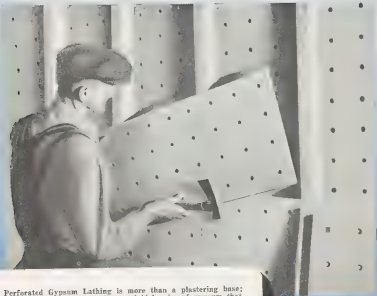
The covering capacities of Victor Plasters are indicated in the following table:

Material	Mix	Sq. yards per ton	Sq. yards per bag	Comments
Victor Hard . . . . .	Neat	450-600	20-25 30	$\frac{1}{8}$ " thick
Victor Setting . . . . .	Neat	450-600	20-25 30	$\frac{1}{8}$ " thick
Waratah Hardwall Plaster . . . . .	Neat	450-600	20 25-30	$\frac{1}{8}$ " thick
Victor Acoustic Plaster . . . . .	Neat		5	$\frac{1}{8}$ " thick
Victorflex . . . . .	Neat	500-650	20-25	
Victor Sand Float Finish . . . . .	Neat	450-550	20-25	$\frac{1}{8}$ " thick
Victor Gypsum Cement (unfibred) for rendering on brick	3 sand 1 Cement	275	13-14	
work or floating on lath work . . . . .	2 1/2 Sand 1 Cement	250	12-13	
	2 Sand 1 Cement	200	10-11	
	1 sand 2 Cement	170	9-10	
Victor Gypsum Cement (fibred) for pricking up on lath work . . . . .	2 Sand 1 Cement	180	9-10	
	3 sand 2 Cement	160	8-9	



PERFORATED

## GYPSUM LATH



Victor Perforated Gypsum Lathing is more than a plastering base; applied to frame construction it provides a rigid barrier of gypsum that protects the framing against fire while bracing it against structural movement. Scientifically located perforations provide the maximum bond possible without affecting the natural adhesion of the plaster to the special surface of the lathing.

Victor Gypsum Lathing plastered with three coats of gypsum plaster produces a wall that has maximum fire resistance with the same appearance as a solid brick house.

Surface cracking common to normal lath and plaster work is substantially eliminated because of the stiffening effect on the framing of the gypsum lathing.

Available in large sheets 54 in. x 16 in. and convenient bundles that are easy to carry and stack, Victor Gypsum Lath is an economic material to use on the job.



MEETS EVERY PURPOSE

# VICTOR PERFORATED GYPSUM LATH

FOR INTERIOR LATHWORK WHERE HIGH QUALITY PLASTER FINISHES ARE  
DEMANDED WITH MAXIMUM FIRE PROTECTION FOR TIMBER FRAMING

## DESCRIPTION

Victor Perforated Gypsum Lath is made in a similar manner to Victor Gypsum Wallboard, the only difference being that the sizes are smaller and the gypsum core is encased in a heavy fibre sheet that bonds tightly to the plaster; regularly spaced holes provide an additional mechanical key through which the plaster is forced to form mushroom-like keys, as illustrated in the adjoining column. The long edges of the lath are enclosed with paper and are rounded to provide an additional key for the plaster; short ends of lath are cut perfectly square.

## QUALITIES

### FIRE-RESISTANCE—SUPERIOR BONDING

Framed walls covered with Gypsum Lath and plastered with  $\frac{1}{2}$  in. or 1 in. of gypsum plaster form a solid fire-resisting barrier unequalled by other types of framed construction. The combined mechanical bond provided by the perforations plus the natural adhesion of the gypsum plaster to the heavy fibre paper outer layer is such that a pull of 800 lbs. per square foot is required to separate the plaster from the gypsum lath.

### ADDS STRUCTURAL STRENGTH—ECONOMY

The large sheets 54 in. x 16 in. x  $\frac{1}{2}$  in. and 36 in. x 16 in. x  $\frac{1}{2}$  in. securely nailed to the framing provide rigid bracing for the timber framing, substantially eliminating surface cracking and crazing common to normal lath and plaster construction. The large sheets permit walls to be lathed quickly and economically, the lath being easily cut with a hatchet where necessary, then broken off.



As the plaster is troweled on, the workman can feel the perforations take hold. The small picture on the right shows what actually happens on the reverse side of the lath.

## NON-WARPING

Unlike other types of lathing, Victor Gypsum Lath does not swell, buckle or shrink, thus providing a true bonding surface to which plaster adheres solidly without cracking or falling off.

## APPLICATION

Victor Perforated Gypsum Lath panels should be applied at right angles (across) studs and joists, with joints staggered. Apply moderately close together, never more than 1 in. apart. Lath panels should be nailed to each support with No. 5 14 in. x 13 gauge galvanneal cloths spaced approximately 4 in. apart and kept 1 in. from edge of panels. Cloths to be driven with the underside flush with the face of the panel.

## SIZES

Victor Perforated Gypsum Lath is made in two sizes:—

54 in. x 16 in. x  $\frac{1}{2}$  in. thick

36 in. x 16 in. x  $\frac{1}{2}$  in. thick

and is packed five sheets to the bundle, covering capacity of each bundle being 30 sq. ft. and 20 sq. ft. respectively



Nailing method for 54 in. x 16 in. lath panels. Five nails per stud; 20 nails per panel. Studs at 16 in. o.c. Lath perforations are not indicated.



Mushroom-like keys automatically form on the reverse side which grip the lath tightly.



# MASTER SPECIFICATION FOR INTERIOR PLASTERING

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This Master Specification has been Prepared to form a Guide or Base from which an Architect may Develop or Modify to Suit the Particular Requirements of the Job it is intended to Describe. Although this Specification Deals only with Internal Plastering, it may easily be Adapted to Incorporate External Work.

## GENERAL CONDITIONS

All plastering shall be carried out by an approved plastering contractor, who shall employ only first-class tradesmen on the work. He must inspect the work and check up on the condition of the surfaces to be plastered, reporting to the general contractor any surfaces that do not provide adequate natural key for the plastering or are so much out of plumb that an excessive quantity of plaster will have to be applied to the surface.

## ANALYSIS AND TESTING

The general contractor shall at all times permit the taking of samples of materials and mixes for testing purposes or making analysis.

## SAMPLES

The general contractor shall at all times provide or cause to be provided samples of mixes, finishes, etc., in connection with the completed work.

## TOOLS

All plastering and mixing tools shall be kept clean, and plasterers will avoid washing tools in water containers designed to supply water for mixing plaster and or gypsum cement and sand.

## STORAGE

All materials such as gypsum cement, hardwall plaster, etc., shall be stored in a shed to protect them from moisture. All storage sheds shall have raised floors.

## MATERIALS

**SAND.**—Sand for floating or base coats shall be sharp clean sand, free from all salt, clay and vegetable matter. It shall vary only slightly from the following specification: Not more than 10 per cent. by weight shall be retained on an 8-mesh sieve; not less than 80 per cent. by weight shall be retained on a 50-mesh sieve; not more than 6 per cent. should pass the 100-mesh sieve.

**WATER.**—Water shall be pure water, fit for drinking, and no other liquid shall be introduced.

**GYPSUM CEMENT** shall be Victor Brand gypsum cement, manufactured by Australian Plaster Industries Pty. Ltd., FIBRED AND UNFIBRED, fibred for use on metal, wood, and Victor Gypsum Lathing.

**HARDWALL PLASTERS** shall be Victor brand, as follows: Victor Hard Finish for painted work; Victor Setting or Waratah Hardwall for all other set walls.

**SANDED PLASTERS** shall be Victor sand float finish.

**ACOUSTIC PLASTER** shall be Victor Acoustic Plaster, to be used not less than 3 in. thick.

**VENT FACES** shall be manufactured from plaster of paris with copper wire bars. Size and shape of vents to be as selected or detailed.

## GYPSUM LATHING

All gypsum lathing shall be carried out with Victor Perforated Gypsum Lathing brought on to the job in an undamaged condition and applied as follows:—

All interior framed walls, ceilings, sock beams, stair soffits and other areas specified to be plastered shall be

lathed with Victor Perforated Gypsum Lath applied with the long dimension at right angles to the framing members (which shall be spaced at 18 in. o.c.), with joints broken in each course. Joints between walls and ceilings shall be staggered and panels shall not be butted tightly nor be more than 1/4 in. apart.

Lath shall be nailed at every support with No. 13 gauge x 11 in. flat head galvanised clouts driven with the underside flush with the face of the lath. Nails shall be fixed 1/2 in. from edges of panels and spaced 4 in. apart—6 nails to each stud, 20 nails to each 34 in. x 18 in. panel.

Fit lath tight together at all re-entrant angles and corners and cut accurately around switch boxes and similar openings. Cutting shall be done with sharp hatchet or knife and then breaking over a straight edge. Where lathed walls abut masonry the joint shall be reinforced with a 12 in. wide strip of 3.00 lbs. expanded metal lath, fastening edges only to masonry and gypsum lath.

All re-entrant angles shall be reinforced over gypsum lath with 6 in. width of 3.00 lbs. expanded metal.

## METAL LATH

Shall be manufactured from blank steel sheets to conform to any standard expanded metal design. It shall be coated with mineral oil and dipped in asphaltum paint before leaving the factory. All metal lathing or self-supporting trussit shall be fixed according to the manufacturers' directions, but recommend the use of

1. Herringbone double-mesh ribbed 26-gauge 3.00 lb. lath for ceilings and walls
2. Trussit herringbone single-mesh ribbed lath for 2 in. solid walls, lath to weigh 6.00 lbs. per sq. foot.

## WORKMANSHIP

### GENERAL RESPONSIBILITY

The general contractor shall not apply any plaster coats upon any work which may be unfinished, imperfect or in any improper condition to receive plaster, and he shall not cover up or finish against such work until it has been rectified or accepted, and authority to proceed given by the architect.

### PREPARATION OF WALL SURFACE

Concrete walls and ceilings shall be completely free from oil, grease, and efflorescences, and hacked to provide good key where necessary. All dust shall be removed from wall surfaces before applying floating coat of plaster. Concrete ceilings shall receive a splash coat of cement slurry, gauged four parts of sand to one part cement and one part lime putty.

Thoroughly wet all concrete, brickwork, terra cotta and gypsum blocks with water to reduce suction before applying plaster.

All wood lathing shall be thoroughly swelled at least one day before applying plaster, and again an hour or so before applying the plaster mortar.

Victor Perforated Gypsum plastering must not be wetted before plastering.

# 1 GROUPS

Permanent wood grounds shall be provided and installed by the carpenter and shall be of such thickness and so set to provide for  $\frac{1}{2}$  in. thick plaster over all types of lath and  $\frac{1}{2}$  in. thickness over all brick, clay tile and other masonry.

Temporary grounds shall be fixed in all cases where necessary for the efficiency of the work.

## MIXING

Scratch coat, floating coat and sand float finish material shall be mixed in the following manner—Mix in a mixing trough on a clean board only sufficient material to be used in one hour. Sand and gypsum cement to be mixed together twice dry with a hoe to an even colour and consistency before adding any water. Mix thoroughly with water to an even consistency. Do not mix one gauging with another, or attempt to retemper old stuff.

Hardwall plasters shall be mixed as follows: Three parts fill a clean bucket with water, then add the plaster until the bucket will hold no more. Leave to soak for ten minutes, then stir well to thoroughly mix. Mix to a creamy consistency and apply to the wall in a thin, even coat.

## APPLICATION

### ON MASONRY

Floating or first coat plastering shall be applied to masonry walls with sufficient pressure to fill all voids and bond on walls. Screed to a level surface with a rough face and allow to set properly before applying finishing coat.

### ON LATHING

Apply scratch coat plastering on metal and gypsum lathing with sufficient pressure to imbed metal lath completely or form a good key behind perforated gypsum lathing. Leave surface rough and score with a rake to provide a good key for the floating coat, which shall be applied after the scratch coat has set, and screeded to a level surface with a rough face. Allow to set properly before applying finishing coat.

On completion, no surfaces shall project beyond the grounds, and all shall be even, true, free from blisters, plaster droppings, trowel marks, discolorations or any other defects. All walls shall be plumb and straight; all angles straight, sharp and square and plumb or level as the case may be. Curved surfaces shall be brought to a true radius and every angle and curve shall be run true and full. All plaster work shall be screeded at all angles, corners and every  $\frac{3}{4}$  ft. on wall and ceiling surfaces. Screeds shall be placed true to grounds and screeds and grounds scraped clean.

### WALL AND CEILING FINISHES

See over page for Specifications for Wall and Ceiling Finishes.

## ORNAMENTAL PLASTERING

All run moulded work shall be accurately mitred at all corners and angles, and shall be run true to full size details. All ornamentation shall be in perfect alignment and in proper relationship to all wall and ceiling surfaces. It shall be of the highest grade of workmanship and shall be cast and installed in accordance with the best practice. Run work shall be gauged 2 parts lime putty to 1 part of ordinary plaster.

Cement run work shall be gauged  
7 parts clean fine sieved Sand  
2 parts Portland Cement.

## FIBROUS PLASTER

All fibrous plaster shall be manufactured and fixed in accordance with the Australian Standard Specification for Fibrous Plaster Products No. (E) A.504, the details and recommendations of which form part of this specification.

The following is offered for the guidance of specification writers

### PLAIN SHEET

Shall be manufactured to contain net less than the following quantities of plaster and clean white sial fibre:

$\frac{1}{2}$  in. sheets—10 lbs. of plaster and 13 ozs. sial.  
1 in. sheets—19 lbs. of plaster and 13 ozs. sial.  
Sheets shall be manufactured by the two gauge method and be thoroughly dry before being brought on to the job.

### MOULDINGS

Shall be cast by the two gauge method and reinforced with sial hemp or 8 oz. hessian scrim incorporated in the plaster over the full length and width of the casing, with the addition of  $\frac{1}{2}$  in. x  $\frac{1}{2}$  in. wood laths at each fixing edge.

All mouldings and members shall be clean and true with sharp and unbroken arrises; the maximum thickness of the cast at any point shall be  $\frac{1}{4}$  in.

Mouldings are nominally measured from edge to edge at the widest part.

## RECOMMENDED PRACTICE

Battens.—Shall be not less than  $\frac{1}{2}$  in. x  $\frac{1}{2}$  in. Oregon or other approved timber spaced at not more than 18 in. centres.

Ceilings.—All types of ceilings shall be constructed with  $\frac{1}{2}$  in. sheets, joints being well scrimmed on the back for flush jointed work.

Walls. Shall be constructed with  $\frac{1}{2}$  in. sheets where flush jointed walls are required or where a more economical specification is required.  $\frac{1}{4}$  in. sheets shall be fixed below door head height with  $\frac{1}{2}$  in. sheets above.

Cornices and Panels.—May be selected from the wide range available at all fibrous plaster factories; these are used in conjunction with the above wall and ceiling sheets. Ornamental and plain cornices are available.

A simple method of specifying fibrous plaster for various rooms may be obtained by utilizing the following code in conjunction with the schedule of wall and ceiling finishes set out on the next page.

F.P.1—Flush fibrous plaster ceilings utilizing  $\frac{1}{2}$  in. sheets.

F.P.1 + —Flush fibrous plaster ceilings utilizing  $\frac{1}{2}$  in. sheets, plus a decorative centre panel.

F.P.2—Strapped fibrous plaster ceiling utilizing  $\frac{1}{2}$  in. sheets and 2 in. cover moulds.

Special details may be noted at the end of the schedule.

## SPECIFICATION FOR WALL OR CEILING FINISHES

### MASONRY BASE

#### TYPE A.1 SMOOTH WHITE FINISH

FIRST COAT:  
3 parts clean coarse Sand,  
1 part Gypsum Cement.

FINAL COAT:  
"Victor" Setting or  
"Waratah" Hardwall.

#### TYPE A.2 HARD SMOOTH WHITE: TO BE PAINTED

FIRST COAT  
5 parts coarse Sand,  
2 parts Gypsum Cement.

FINAL COAT:  
"Victor" Hard Finish.

#### TYPE A.3 SANDED FINISH

FIRST COAT:  
3 parts coarse Sand,  
1 part Gypsum Cement.

FINAL COAT:  
"Victor" Sandfloat Finish.

#### TYPE A.4 ACOUSTIC PLASTER FINISH

FIRST COAT:  
3 parts clean coarse Sand,  
1 part Gypsum Cement.

SECOND COAT:  
Thin bonding coat of "Victor"  
Setting.

THIRD COAT:  
1/2 in. coat of "Victor" Acoustic  
Plaster.  
Level up and finish with a  
wooden float.

### LATH BASE

#### TYPE B.1 SMOOTH WHITE FINISH

FIRST COAT:  
2 parts coarse Sand,  
1 part fibred Gypsum Cement.

SECOND COAT:  
3 parts coarse Sand,  
1 part Gypsum Cement.

FINAL COAT:  
"Victor" Setting or "Waratah"  
Hardwall.

#### TYPE B.2 HARD SMOOTH WHITE: TO BE PAINTED

FIRST COAT:  
2 parts coarse Sand,  
1 part fibred Gypsum Cement.

SECOND COAT:  
3 parts coarse Sand,  
2 parts Gypsum Cement.

FINAL COAT:  
"Victor" Hard Finish.

#### TYPE B.3 SANDED FINISH

FIRST COAT:  
2 parts coarse Sand,  
1 part fibred Gypsum Cement.

SECOND COAT:  
3 parts coarse Sand,  
1 part Gypsum Cement.

FINAL COAT:  
"Victor" Sand float Finish.

#### TYPE B.4 ACOUSTIC PLASTER FINISH

FIRST COAT:  
2 parts coarse Sand,  
1 part fibred Gypsum Cement.

THIRD COAT:  
Thin bonding coat of "Victor"  
Setting.

SECOND COAT:  
3 parts coarse Sand,  
1 part Gypsum Cement.

FOURTH COAT:  
1/2 in. coat of "Victor" Acoustic  
Plaster.

## SCHEDULE OF WALL AND CEILING FINISHES

ROOM OR CODE No.	WALL FINISHES		CEILING FINISHES		
	BASE	SPECIFICATION	BASE	CEILING	CORNICE
LOUNGE	BRICK	A.3	FRAME	F.P.1	12in. DECORATIVE
KITCHEN	BRICK	A.2	FRAME	F.P.1	3in. PLAIN
OFFICE No. 60	CONCRETE	A.2	CONCRETE	A.4	—
BEDROOM	GYPSUM LATH	B.2	FRAME	F.P.1 +	18in. DECORATIVE

These examples illustrate how clearly plastering may be specified when a Schedule is adopted.

OTHER API PRODUCTS

GYPSUM PRODUCTS

VICTOR GYPSUM WALLBOARD  
VICTOR GYPSUM LATHING  
GYPSUM FLOOR BLOCKS  
HARD WALL PLASTERS  
BASE PLASTERS  
MOLDING PLASTERS  
PLASTER OF PARIS  
DENTAL PLASTERS  
POTTERY PLASTERS

PAINT PRODUCTS

WARATAH KALSOMINE  
WARATAH MILK WHITE

INSULATION

NSULWOOL ZEROBLOCK  
NSULWOOL BLANKETS  
NSULWOOL Batts  
INSULWOOL GRANULATED

SOUND CONTROL

PERFOFLEX  
PERFOFOLY  
PERFOSTEEL  
ACOUSTIC TELEPHONE BOOTHS

THE SIGN OF QUALITY



AUSTRALIAN PLASTER INDUSTRIES  
PTY. LTD.

MELBOURNE • SYDNEY • BRISBANE  
• ADELAIDE • HOBART •



# FIBROUS PLASTER

From the collections of Sydney Living Museums / Historic Houses Trust of NSW

# FIBROUS PLASTER

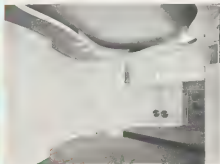
## ARCHITECTURAL INTERIORS

A RANGE OF FIBROUS PLASTER PRODUCTS IS AVAILABLE FROM MANUFACTURERS THROUGHOUT AUSTRALIA WHO HAVE OVER THE YEARS DEVELOPED ORGANISATIONS IN THE CAPITAL CITIES AND MAIN COUNTRY CENTRES THAT WILL PROVIDE A COMPLETE SERVICE FOR ARCHITECTS, BUILDERS AND CONTRACTORS WHO REQUIRE FIBROUS PLASTER PRODUCTS FOR THEIR JOBS. MANUFACTURING AND FIXING OF FIBROUS PLASTER IS HANDLED BY ALL THESE ORGANISATIONS.

Fibrous Plaster is a modern fireproof material available to Architects and Builders for the interior lining and beautification of all buildings from the humble cottage to the vast commercial structures of the city.

No other material is more adaptable to modern construction than Fibrous Plaster with its innumerable advantages, some of which are detailed later.

### JOINT FREE SURFACES.



The front salon, designed by A. S. & R. A. Eggleston, clearly indicates the versatility of FIBROUS PLASTER—unlimited joint-free surfaces—smooth sweeping curves are at your command when you use FIBROUS PLASTER for interior finishing.

**ORNAMENT.** Delicate and Bold Ornament can be modelled and economically reproduced from casts, permitting the extensive use of ornament in places where cost would normally prohibit its use. Whether modern or classic ornament is required, Fibrous Plaster can be relied upon to reproduce it faithfully. It is not recommended that Fibrous Plaster cornice mouldings be fixed to walls and ceilings lined with wall boards other than Fibrous Plaster, as the expansion and contraction of these boards under changing climatic conditions is likely to cause damage to the ornament.

**FIRE RESISTANCE.** Fibrous Plaster is one of the few interior linings available today that is recognised by Fire Underwriters' Association of Australia as a fire-resisting material, and as such is favoured by leading Insurance Companies for interior linings of timber and brick veneer homes.

**STRENGTH AND DURABILITY.**—Fibrous Plaster is stronger and more durable than any other interior lining available to Architects today; being of mineral origin, Fibrous Plaster is practically indestructible.

**EASE OF REPAIR.**—Fibrous Plaster is the only internal lining material that can be easily repaired should damage occur, such damage being made good with Plaster of Paris, leaving no trace of the damage after the repair work has been completed.

**UNIQUE SERVICE OFFERED BY FIBROUS PLASTER MANUFACTURERS.**—One of the outstanding reasons why Fibrous Plaster is favoured by Architects and Builders as an interior lining material is the simple fact that Fibrous Plaster is manufactured, supplied and fixed ready for decorating, by the one organisation, which means that the Fibrous Plaster manufacturer alone is responsible for the final result; naturally, under such an arrangement, the manufacturer always makes sure that the finished job is of first class quality.

### ECONOMICAL REPRODUCTION OF ORNAMENT.



Ornament such as that illustrated above may be extensively used in places where cost would normally prohibit its use, because the technique of Fibrous Plaster manufacture permits the economic reproduction of standard or specially designed detail work. Cedric Ballantyne, Arch. test.

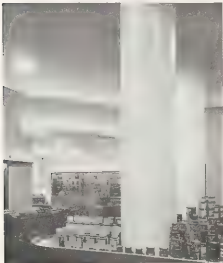
**ECONOMY.**—The wide range of stock sheets available from the Fibrous Plaster trade considerably reduces the waste usually encountered when other materials are used for internal lining. Particularly large wall sheets eliminate the necessity to finish numerous joints and cover moulds usual with other materials, effecting further economies. A comparison between material, fixing and decorating costs of various materials almost always favours Fibrous Plaster on all three points.

**UNAFFECTED BY CLIMATIC CONDITIONS.**—Fibrous Plaster does not expand or contract; cracks in structures lined with Fibrous Plaster being due to the shrinkage of timber or settlement of foundations. Under Australian climatic conditions, Fibrous Plaster is an ideal interior lining from all points of view.

**RESISTANCE TO VERMIN AND RODENTS.**—Fibrous Plaster is unaffected by attacks from white ants and other destructive insects, rats or mice. Fibrous Plaster is not subject to fungus growth or dry rot.

# REMODELLING WITH FIBROUS PLASTER

THE VERSATILITY OF FIBROUS PLASTER FOR REMODELLING IS UNSURPASSED BY ANY OTHER MATERIAL. OLD STYLE BUILDINGS WITH THEIR DUST-COLLECTING BITS AND PIECES CAN BE CHANGED ALMOST OVERNIGHT BY THE JUDICIOUS USE OF FIBROUS PLASTER. UP-TO-THE-MINUTE ARCHITECTURAL STYLES CAN BE INTRODUCED TO GIVE DISTINCTION TO THE INTERIORS OF THOSE BUILDINGS THAT HAVE FALLEN BY THE WAYSIDE SO FAR AS SMARTNESS IS CONCERNED.



Brooks, Robinson's showroom transformed with Fibrous Plaster from a dull, unappealing showroom to an appealing store.

Brooks, Robinson's showroom illustrated above has been transformed with Fibrous Plaster from a dull, uninspiring shop to a stimulating display area that literally sells goods to the customer. High ceilings, and featuring the familiar column and beam construction favoured fifty years ago, this showroom seemed to have reached the stage where thousands of pounds would have to be spent to effect the desired modernisation. However, a skilful designer, with the aid of Fibrous Plaster, and at a fraction of the cost, has produced the delightful effect shown.

**WEIGHT RIGIDITY AND REINFORCEMENT.**—Each square yard of Fibrous Plaster is reinforced by the incorporation of approximately three miles of steel hemp, forming a solid rigid sheet heavier than most other interior linings, giving added strength to the framework of brick veneer and timber homes.

**SURFACE.**—Architectural design today is following the trend of plain unbroken joint-free surfaces so much in demand by building owners. The natural smooth white matt finish of Fibrous Plaster and the ease by which sheets may be flush jointed make it the obvious choice for interior decorating today. All decorating mediums, including sand and texture finishes, may be easily applied to Fibrous Plaster. Undecorated, the natural white surface of Fibrous Plaster acts as an ideal light reflecting medium and its use for this purpose is fully explained on another page.

**REPRODUCTION OF SPECIAL DETAILS.**—The reproduction of special details such as ornamental cornices, columns, column capitals, entablatures and pediments are items that may be easily produced and fixed by leading Fibrous Plaster manufacturers who employ skilled modellers and carvers for the preparation of originals from which these details may be cast. Certain Fibrous Plaster manufacturers specialise in the reproduction of these special details which are designed in the architect's office, while in some instances Fibrous Plaster firms are prepared to supply details and designs of ornamental work.

**LARGE SHEETS AVAILABLE.**—The maximum available sheet size of Fibrous Plaster, namely, 24 ft. x 7 ft., is another of the reasons why Fibrous Plaster has become the most-sought-after material for interior finishings of brick veneer and timber homes. With such large sheets it is possible to complete over two-thirds of most wall areas without resorting to finishing or covering of the number of joints necessary with other products.

## RANGE OF PRODUCTS.

**PLAIN SHEETING.**—Plain sheets for general wall and ceiling work available in a wide range of sizes and two thicknesses,  $\frac{1}{8}$  in. and  $\frac{1}{4}$  in., the latter being exclusively used for walls and usually supplied large enough to span from wall to wall.

**REINFORCED SHEETS.** Specially produced for application to the underside of factory roof purlins without the use of heavy battening, an economic and ideal lining material for use in conjunction with Insulwool insulation.

**TILE PATTERN SHEETS.** For use in Kitchens and Bathrooms.

**PLAIN AND ORNAMENTAL CORNICES.** in an almost unlimited range of designs.

**VENTILATING CORNICES.**

**DECORATIVE PANELS AND PLAQUES.**

**FIREPLACE SURROUNDS,** suitable for Gas and Electric Fires.

**WINDOW PELMETS.**

**ARCHITECTURAL ORNAMENT.**

**SHOW-WINDOW ORNAMENTS** and decoration.

**BEAM CASINGS**

**REFLECTING COVES.**

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FIBROUS PLASTER

# RECOMMENDED PRACTICE FOR FIBROUS PLASTER WORK

OFFICERS OF THE STANDARDS ASSOCIATION OF AUSTRALIA IN CONJUNCTION WITH A COMMITTEE, REPRESENTATIVE OF THE FIBROUS PLASTER INDUSTRY, SET DOWN IN 1942 WHAT WAS CONSIDERED TO BE THE CORRECT PROCEDURE FOR THE MANUFACTURE AND FIXING OF FIBROUS PLASTER. EMERGENCY STANDARD NO. 1(E) A 504-1942 SETS OUT FULLY THE MOST IMPORTANT STANDARD TRADE PRACTICES OF THE INDUSTRY WHICH MUST BE FOLLOWED IF FIRST-CLASS WORK IS REQUIRED. A COPY CAN BE OBTAINED FROM THE STANDARDS ASSOCIATION OFFICE IN YOUR NEAREST CAPITAL CITY.

## FIBROUS PLASTER PRODUCTS STANDARD SPECIFICATION INCORPORATES THE FOLLOWING INFORMATION:

MATERIALS used in the manufacture of Fibrous Plaster products.

MANUFACTURING standards for the following products:

- PLAIN SHEETS
- REBATED SHEETS
- REINFORCED SHEETS
- MOULDINGS, ETC.
- BEAM CASINGS
- MISCELLANEOUS.

Sleek smooth ceiling surfaces relieved with delicate ornamental cornices typify FIBROUS PLASTER work at its best in the Kinema Theatre, Albert Park, designed by Architect R. Le Poer Terry.

## FIXING OF FIBROUS PLASTER WORK.

Architects and Builders who demand really first-class finishes should insist that no inexperienced tradesmen are employed to fix and finish Fibrous Plaster. Most reputable Fibrous Plaster manufacturers have built up a contracting department with the sole aim of providing high quality interiors of Fibrous Plaster for Architects and Builders.

No matter what the job is, Architects should insist that all Fibrous Plaster is fixed and finished by the manufacturer.

For really good quality wall and ceiling sheets, plaster and fibre content in the finished products should not be more than 5 per cent. below the quantities shown in the table below.

Nominal Sheet Thickness	Weight of Plaster per sq. yard	Weight of Hemp Fibre per sq. yard
1/2 in.	16 lbs.	11 oz.
3/4 in.	19 lbs.	13 oz.

Architects are advised to include in their Fibrous Plaster Specification a clause covering the material quantities as set out above.





## SPECIFICATION POINTS

SO THAT FIRST CLASS RESULTS MAY BE OBTAINED WITH FIBROUS PLASTER, ARCHITECTS ARE ADVISED TO INCLUDE IN THEIR SPECIFICATIONS THE FOLLOWING RECOMMENDATIONS WHICH ARE THE RESULT OF EXPERIENCE OVER A LONG PERIOD.

**PREPARATORY WORK.** A satisfactory foundation in the form of wall framing is essential to secure good results with Fibrous Plaster. Rigid wall framing constructed with straight-grained, reasonably dry, gauged battens and noggings will enable Fibrous Plaster manufacturers to create interiors that are as pleasing as those from those found where solid masonry is used.

Clause providing for framing details such as those mentioned above should be included in the specification of carpenters' work.

**BATTENS.** Battens for Fibrous Plaster shall be kiln dried and reconditioned, hardwood or Oregon battens not less than 1 1/2 in. x 1 in. in size, and spaced at not more than 18 in. centres; double battens shall be used for all flush joints made at right angles to the ceiling joints. Ceiling battens shall be jacked down to a true horizontal surface with wood packing pieces.

**NAILS.** It is important that all nails used for the attachment of Fibrous Plaster to wall framing, etc., be galvanised nails of the following sizes.

Materials to be fixed	Nails
Sheets 1/2 in. thick and over	1 1/2 in. x 10 gauge G.L. clouts
Cornices & Cover Moulds—	
Small . . . . .	1 1/2 in. x 14 gauge or 1 1/2 in. G.L. nails
Large . . . . .	2 in. x 12 gauge G.L. nails

**FIXING.** Sheets shall be securely nailed to battens or studs at 18 in. centres, excepting at internal or external angles, where they shall be spaced at 6 in. centres.

Cornices shall be nailed at 18 in. centres to studs, battens or plugs. Applied panels shall be fixed in the same relationship to the shape of the wall or ceiling and

securely nailed in position. Additional support for panels shall be provided by the use of scrim to attach the panels to ceiling joists or battens.

**REINFORCING ANGLES.** The internal angles of all framed walls should be reinforced with 1 1/2 in. x 1 1/2 in. or 2 in. x 2 in. x 26 gauge galvanised sheet iron securely nailed to the studs before the plaster sheets are fixed.

**JOINT REINFORCEMENT.** Scrimming of joints shall be carried out with best quality sisal reinforcing hemp or 8 oz. hessian.

**SCRIMMING.** All cornice mitres, flush joints, butt joints, external and internal angles shall be reinforced by scrimming with sisal fibre or hessian scrim thoroughly incorporated in and soaked with stopping plaster.

**PUNCHING.** All sheets, panels, etc., shall be firmly held against the fixing surface and the clouts and nails punched 1/4 in. below the surface. Punching shall not be done until all fixing of architraves, skirtings, floors, etc., has been completed.

**STOPPING.** Nail holes, joints, angles, etc., shall be filled with stopping plaster which, after partially hardening, shall be cleaned off. It shall be followed by a final application, which shall be brushed and trowelled to match the adjacent surface.

**RECOMMENDED SHEET THICKNESSES.** Sheets 1/2 in. thick should be used for all ceilings and wall surfaces above door head. Walls below door head should be covered with 1/4 in. thick sheets.

**SHEET SIZES.** Fibrous Plaster sheets are manufactured in a large range of standard sizes designed to meet the needs of all types of buildings. Wall sheets up to 24 ft. x 7 ft. are available.

### FIBROUS PLASTER AND INSULATION.

Comparison of K factors (thermal conductivity) of building materials is not a fair basis on which to assess the insulation value of individual building materials, because in most instances walls, floors and ceilings are constructed from a number of different materials, e.g., weatherboards, studs and Fibrous Plaster are used to construct the walls of timber-framed houses.

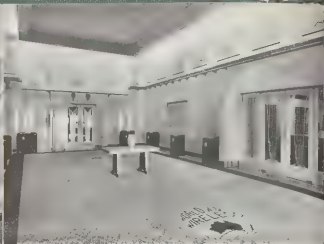
Figures published under the authority of the Commonwealth Experimental Building Station give a list of K factors for materials commonly used by the building industry wherein we find that Fibrous Plaster has an efficiency of 10 per cent. compared to a similar thickness of a recognised insulating material. However, when we examine the heat transmission coefficients, known as the U factor, of various forms of construction, we find that a timber framed wall lined with Fibrous Plaster has a U factor of .40, whereas the U factor of a similar wall with the addition of 1 in. of insulation board is only .25, clearly indicating that little benefit results from the application of only one-half inch of insulation. To obtain any real benefit from insulating materials it is necessary to apply them in layers not less than 2 in. thick.

FIBROUS PLASTER featured in some of its many forms in the main hall of the MWS & D. Building, Sydney. Budden & Mackey Architects.

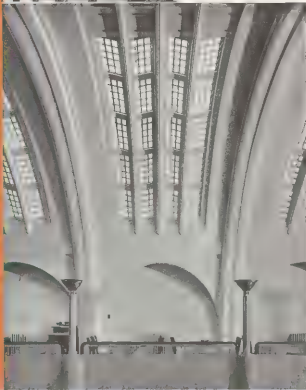


FIBROUS  
PLASTER

The location of a perforated Fibrous Plaster cornice is ideal for the removal of vitiated air—a factor essential for the efficient operation of air conditioning equipment.



(above)—The light reflecting values and fac'e modelling properties of Fibrous Plaster are used to advantage in the main vestibule of the A.W.A. Building in Sydney. Morrow & Gordon and Robertson & Marks, Architects.



(right)—Selected for the interior walls and ceilings of this timber home, the pastel tinted joint-free Fibrous Plaster walls and ceiling of this Lounge Room act as a foil for the carefully chosen furnishings. J. A. LeGrosche Architect.

(left)—Architect L. M. Perrott selected Fibrous Plaster for the faithful reproductions of curved ribs, grilles and decoration of the dining room ceiling of the Hotel Australia, Melbourne.

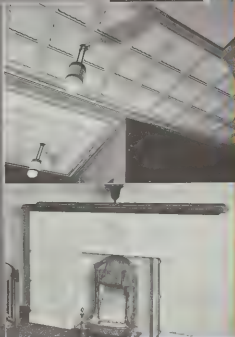
(right)—Architects of the State Savings Bank of Victoria do not hesitate to select Fibrous Plaster for the interior walls and ceilings of Brick Veneer and Timber homes erected under their supervision. For permanence, economy and beauty, Fibrous Plaster has no equal.

(far right upper)—Fibrous Plaster is used as a new medium for the expression of an ancient form of decoration for the foyer ceiling of the Trustees Executors & Agency Co. Building. A. & K. Henderson & Partners, Architects.

(far right lower)—Fibrous Plaster fireplace surrounds and mantels are ideal for use where gas and electric fires are installed.

25  
2

FIBROUS  
PLASTER

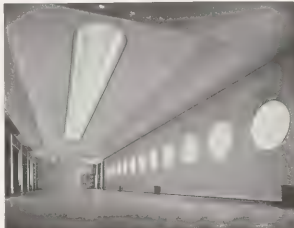


# LIGHT REFLECTION WITH FIBROUS PLASTER

APPRECIATION OF INDIRECT LIGHTING AS A DECORATIVE MEDIUM HAS RESULTED IN A SEARCH BY DESIGNERS FOR A MATERIAL THAT CAN BE MODELLED INTO SMOOTH SWEEPING CURVES FOR REFLECTING LIGHT AT LOW COST; SUCH A MATERIAL IS FIBROUS PLASTER WITH ITS INHERENT CAPACITY FOR EASY REPRODUCTION OF CURVED SMOOTH WHITE SURFACES THAT ARE IDEAL FOR THE DIFFUSION OF ARTIFICIAL LIGHT

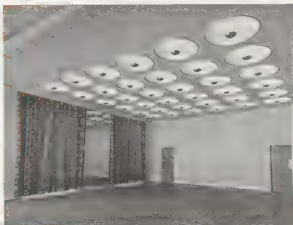
**HIGH LIGHT REFLECTION FACTOR.**—Being almost pure white, Fibrous Plaster reflects 90 to 95 per cent. of all light sources impinging on it; this factor has been recognised only recently by lighting authorities, who now realise the value of Fibrous Plaster for internal use where complete indirect lighting installations are planned.

**CORRECT REFLECTING CURVES.**—Long runs of reflecting curves easily and accurately cast with Fibrous Plaster to curves predetermined by lighting engineers reduce to a minimum any loss of illuminative power from artificial light sources. Reflecting curves cast from Fibrous Plaster present no problems where it is necessary to blend such curves into the adjoining ceiling surface, as Fibrous Plaster is easily invisibly jointed.



Edward F. Dillon & Newton, Architects

The two illustrations of the Coral Room at St. Kilda Palace indicate the flexibility of Fibrous Plaster when used for interior light reflecting purposes; both indirect and semi-indirect lighting has been used to provide an atmosphere of gaiety to the dancing area. Grouped mushroom lights are used to the best advantage together with long unbroken reflecting curves; all are constructed from Fibrous Plaster, as is the applied bas relief ornament on the walls.



**VARIED FORMS AVAILABLE.**—Designers have almost unlimited scope where they decide to use Fibrous Plaster as a reflecting medium; some indication of how sweeping curves, coves, etc., may be used as decorative mediums may be gained by a glance at the two illustrations on this page.

Shallow domes used in conjunction with a spun copper or aluminium reflecting disc have proved extremely satisfactory where soft subdued lighting, such as that required in cafes, etc., is required. The height at which the reflecting disc is suspended from the domes must be watched to make certain that the complete surface of the dome is evenly lit. Domes up to 8 ft. in diameter and 12 in. in height can be cast in one piece in Fibrous Plaster.

# IMPROVING NATURAL LIGHTING IN FACTORIES

25  
2

## MAXIMUM EMPLOYEE EFFICIENCY WITH GOOD LIGHTING.

Maximum employee efficiency can only be obtained by providing the best possible working conditions, one important condition being the provision of adequate natural and artificial lighting. Employee fatigue resulting from poor lighting where precision work is carried out being quickly reflected in the production rate.

Commonwealth munition factories, textile and knitting mills, were quick to realise the value of Fibrous Plaster as a light reflecting medium when used in the form of reinforced sheeting for lining factory ceilings, and over a million square feet have been installed.

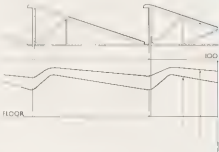
The illustration below shows clearly the vast improvement made when the underside of a factory roof is lined with Fibrous Plaster. Reinforced Fibrous Plaster sheets incorporating special reinforcement on the back to eliminate the use of battens, normal with other lining materials, considerably reduce installation costs.

## IMPROVEMENT IN LIGHT INTENSITY OVER WHOLE FLOOR AREA.

The adjoining graph illustrates how the use of Fibrous Plaster in a sawtooth roof type factory promotes better working conditions by providing even lighting over the whole floor area. Without a light reflecting ceiling, areas of comparative light and dark are encountered throughout the factory causing considerable discomfort to employees who move around or who have need to look up from their work.

## DECORATION OF FIBROUS PLASTER.

Pages could be written about how and how not to apply the many and varied forms of decoration to Fibrous Plaster surfaces, and it is realised that the pet theories of master decorators in many instances produce good results. However, we believe that directions given by paint manufacturers on the correct application of their products is based on years of experience and should be followed if first class results are expected. Particularly we emphasise the benefits resulting from the application of a coat of recognised sealing material prior to the application of the final coat of decoration.

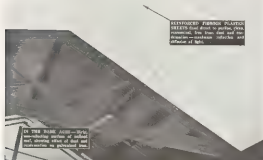


## CONTRAST BETWEEN OLD AND NEW VIVIDLY SHOWN—VAST IMPROVEMENT WHEN LINED WITH FIBROUS PLASTER.

The installation of Fibrous Plaster in the Melbourne factory illustrated on the left means that employees will enjoy cooler summers and warmer winters as well as 20 per cent. better lighting, together with dust-free conditions.

Factory regulations require all buildings used for the preparation of foodstuffs, or where females are employed, to be lined. Additional comfort may be provided by installing a 1 in. layer of Mineral Wool insulation on the back of the Fibrous Plaster lining before its erection; such a ceiling will have a high insulation factor compared to other linings.

FIBROUS PLASTER



**FIBROUS PLASTER**

for

Beauty, Durability, Economy

THE FOREGOING TECHNICAL INFORMATION CONCERNING  
THE APPLICATION OF FIBROUS PLASTER IS PRESENTED  
WITH THE COMPLIMENTS OF THE

**ASSOCIATED FIBROUS PLASTER MANUFACTURERS  
OF AUSTRALIA****24 BOND STREET, SYDNEY****Telephone: BW 2829**



**PICTON HOPKINS & SON** PTY.  
130 CHURCH STREET, RICHMOND, VICTORIA LTD  
*for*  
**FIBROUS PLASTER, PLASTERING & ACOUSTICS**

From the collections of Sydney Living Museums / Historic Houses Trust of NSW

**PLASTERING CONTRACTORS, FIBROUS PLASTERERS,  
ARCHITECTURAL MODELLERS, ACOUSTIC EXPERTS**



**25**

**3**

**Service by Picton Hopkins & Son Pty. Ltd.**

**CONTRACTING**

Our complete contracting service is such that the whole of your interior decorating ideas can be entrusted to us for faithful reproduction. Skilled artisans to interpret your ideas and first class tradesmen using quality materials are your guarantee that the ultimate in quality finish is available for your clients at the lowest cost. We will assist in the design of your decorative schemes if desired.

**PLASTERING**

Since the time of the Pharaohs fine plaster finishes have been recognised for their beauty and permanency for all classes of work. The application of such finishes can be faithfully entrusted to the P.H. & S. organization, which is equipped to carry out plastering contracts calling for all types of finishes used by the building trade at present.

Hardwall Plaster, Texture or Sand Finish will be faithfully carried out to the architect's specification and design whether the style is modern or period.

**SCAFFOLDING**

We undertake contracts or sub-contracts, for the supply and erection of scaffolding where any structural, decorative, repair or cleaning down operation is to be carried out.

**FIBROUS PLASTER**

For years architects and contractors have recognised the advanced methods of Fibrous Plaster manufacture and fixing employed by our organization as being the most thorough and complete available. Entrusted with the application of either ornamental or plain Fibrous Plaster, Picton Hopkins can be relied upon to create in any type of building the highest quality finish and atmosphere.

Illustration of Georges and Geigers showrooms indicate the beautiful interiors that may be created when Fibrous Plaster is utilized as a modernizing medium. False walls, delicate mouldings and accessories designed to diffuse artificial light are only a few of the ways Picton Hopkins employ Fibrous Plaster to create beautiful architecture within old or new buildings.

Old and tried techniques are used to accurately reproduce ornamental Fibrous Plaster work in all architectural styles. Damage to such detail work during transportation and fixing is eliminated by the incorporation of hemp, hessian and lath reinforcement during manufacture. Detail work can be produced to architect's individual requirements or a selection may be made from an exhaustive stock.

For first class and really economical results, Fibrous Plaster should be fixed by the manufacturer, who employs for the purpose specially trained tradesmen fully conversant with the work. Our organization favors this procedure and have followed it for years.

Domestic interiors of cottages and mansions similar to those illustrated are created by our craftsmen with same skill and care as used for costly city buildings.





# Beautiful Interiors

by PICTON HOPKINS

25  
3

Specialists in the art of applying fine plaster finishes to walls and ceilings in all types of buildings, our craftsmen can be relied upon for that extra effort so essential where first-class workmanship is required.

Ample supplies of high grade materials, skilled craftsmen and complete contracting equipment have been properly organized to allow jobs of any type or magnitude to be completed with maximum efficiency.

Our organization has developed a service of co-operation direct with architects assuming undivided responsibility for work done under their supervision. The field of operation within the building industry covered by the P.H. & S. organization include:—

Internal Plastering   Ornamental Fibrous Plaster  
External Rendering   Domestic Fibrous Plaster Work  
Interior Decorating   Acoustical Treatment  
Scaffolding Service

More detailed information concerning the above operations are included in the following pages of this brochure; any additional information you may require can be obtained by contacting our representatives, who are available to assist in the solution of any of your problems associated with the above trades.

Illustrated on this page are typical examples of work carried out by the Picton Hopkins organization; in each instance an existing building has been completely transformed by the skilful use of Fibrous Plaster and Hardwall Plaster. Fine interiors such as these are typical of our organization.

PICTON HOPKINS & SON PTY. LTD.  
130 CHURCH STREET, RICHMOND, VICTORIA  
Telephone JA2169

171 MURRAY STREET, HOBART, TASMANIA  
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PLASTMOLD PRODUCTS  
34 Union St., West Brunswick,  
Victoria. Telephone: FW 1121

# PLASTMOLD

## INTERIOR HOME FIXTURES

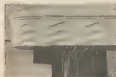


★ Plastmold is a new departure in moulding providing lightness of construction with great strength and durability. Its surface permits colouring to match or tone with any interior decorating. No structural alteration is necessary to permit the installation of Plastmold fixtures.

Plastmold Indirect Lighting Units give complete diffusion of light unobtainable with other materials. The double conical recesses eliminate all heavy shadows, give an even, pleasant spread of light. The unique light reflecting quality of Plastmold gives maximum light value four 60 watt globes give over 4 foot-candles of general illumination in an average size room. Illustrated is Model No. 2.



Plastmold Fire Fronts are available in nine standard designs, both plain and texture surfaced, to take all types of unit fires. Finer, where required, fit in wall recesses or between studs. A wide variety of sizes, some specially designed for covering existing old chimney breasts, are available. Illustrated is Model No. 6.



Plastmold Curtain Pelmet when installed becomes an interior part of the wall. They replace old iron valances and completely conceal all fittings. Illustrated is style No. 1.

Illustrated brochure and complete specifications and orders are available from the manufacturer—

## PLASTMOLD PRODUCTS

34 UNION STREET, WEST BRUNSWICK, VICTORIA

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PLASTMOLD INTERIOR HOME FIXTURES ARE SOLD THROUGH  
ALL REPUTABLE RETAIL HOUSES.

RAMSAY'S CATALOGUE

# "ROKSO"

## the modern hardwall plaster

Highly resistant to moisture and free from alkali and chemicals injurious to paint and wallpaper, Rokso does not require neutralising before painting and will not crumb, crack or flake. Water paints may be applied twenty-four hours after its application, and oil paints may be applied without the risk of saponification when Rokso is used.

### APPLICATION

First see that all surfaces to be plastered are thoroughly clean and free from dust, then wet walls thoroughly. Render to a thickness of approximately  $\frac{1}{2}$  of an inch on all brick or concrete surfaces.

On stone surfaces render coat should be heavily scored and scratched and allowed to dry, then floated as for brick walls.

Set coat may be applied four hours after float coat, and should be skummed on to a thickness of approximately  $\frac{1}{8}$  of an inch.

Rokso can be finished with wood float or steel trowel.

When floating, use plenty of water on your brush.

Float coat can be used for finish straight off the wood float and gives a finish closely resembling a very fine

texture, which may be painted, saving the cost of applying a setting coat.

### COLOUR TREATMENT

Because of its purity and freedom from harmful chemicals, Rokso forms a perfect base for paint and wallpaper. Even the most delicate tints of water paints will retain their true colour or shade. Wallpaper of the most delicate tonings may be used without the risk of chemical stains, which so often happens when Rokso is not specified.

### MIXING

Rokso should be mixed in a clean bucket. Clean water, free from alkali, salt or other impurities to be used.

Never mix one batch with another or attempt to retamper after it has commenced to set.

Mix only a quantity which can be applied in one hour.

When mixed, let stand for 10 minutes. This will improve spreading.

Manufactured to a formula the result of many years of research and experiment designed to overcome the shortcomings of ordinary hardwall plaster, Rokso is protected by application for patents in Australia, Nos. 25715 35 and 25362 35, and by years of performance under varying conditions has proved itself thoroughly dependable.



Interior Treatment with Rokso Hard-Wall Plaster.

## PLASTERING COMPOUNDS CO.

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RAMSAY'S CATALOGUE

**GLASS**

SECTION

**26**

SECTION

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CATALOGUES 1 and 2

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# FRANK G. O'BRIEN LIMITED

ALLEN STREET, WATERLOO, SYDNEY, AUSTRALIA

GLASS

JOINERY

SHOPFRONTS

"NACO" AIR CONTROL WINDOWS

STAINED GLASS ARTISTS

Telephones. MX 3271 (16 lines)

26

1

## Mirrors

Sole proprietors and manufacturers of "Golden Ray" and "Platinum" mirrors. Particularly suitable for decorative schemes which enable architects to obtain colourful harmony in mirror decorations. Silver mirrors, embossed and painted mirrors, and general mirror decorations to architects' details.

## Brilliant Cutting

A process for embellishing glass and mirrors with a design cut and polished into the surface of the glass. Beautiful decorative effects are obtained in a wide range of designs. The process is particularly adaptable for mirrors.

Our designers are experienced in expressing architects' designs in brilliant cutting, and architects are invited to avail themselves of our experience.

## "Naco" Air Control Windows

Naco air control louvre windows are distributed throughout New South Wales, Victoria, Tasmania and overseas by this Company.

Naco air control windows are the original adjustable glass louvre windows, the basic principle of which is so simple that trouble is never experienced with complicated mechanisms wearing and becoming unusable. The fittings are the result of twenty years' specialised engineering experience.

In addition to standard fittings, there are many special adaptations of Naco, and architects are invited to discuss problems where light and ventilation is required without draught, with our representatives.

## Metalite Patent Glazing

This method supersedes the original leaded lights, and is constructed of zinc sections, and can be manufactured to any design and finished in copper, nickel-plated, or Florentine bronze. It is lighter, stronger and more rigid than lead-lights.

## "Carrara" Structural Glass

Carrara is a special type of structural glass made in flat slabs in practical sizes up to 9 ft. x 6 ft., and in thicknesses to suit all requirements.

Carrara does not deteriorate, crack or craze. Will not absorb liquids or odours. It will not lose

its polish or change colour (e.g., in a bathroom, water having a high iron content will never stain it) as so many other similar materials do. The mechanically ground and polished finish gives a lasting dignity. There is no waviness or warping to mar the design.

Laboratory tests and actual use prove that Carrara expands less than any other type of structural glass to which it may be compared, the coefficient of expansion being only .0000077.

Carrara can be set in large slabs with a minimum number of joints and, these few joints being hair-lines, leave no place for dirt to lodge, making cleaning a simple matter.

Carrara, with its mirror-like surface, lends itself to the modern trend of decoration and may be sand-blasted in various tones and shadings, no matter how intricate; or may be sand-blasted deep enough to represent carving and, if desirable, colours may be applied.

## Shopfronts and Interiors

Special equipment and trained staff organised and kept up to date to efficiently carry out architects' details and instructions for all modern store treatments

## Tylaglass

A structural glass supplied in Ashlar slabs, 16 in. x 8 in., in a wide range of colours, both plain and marbled. Competitively priced with tiles. Superior in finish to any other material or product for wall facing and, being a structural glass, cannot check or craze, and will not absorb grease, etc., and is unaffected by most acids and alkalis.

## Samples and Services

Samples and details of all our products will be supplied on request to architects. Representatives trained in the use of the Company's products are always available to co-operate with architects, who are invited to avail themselves of our architectural services.

The Company's representatives are equipped to furnish technical data, descriptive literature, full-sized details, samples, etc., of all the Company's diversified products.

RAMSAY'S CATALOGUE

## FRANK G. O'BRIEN LIMITED

ALLEN STREET, WATERLOO, SYDNEY, AUSTRALIA

Telephone: NX 3871 (14 lines)

## GLASS

"NACO" AIR CONTROL WINDOWS

## JOINERY

## SHOPFRONTS

STAINED GLASS ARTISTS

## GENERAL GLASS INFORMATION

## PLATE GLASS

Thickness	Maximum Sizes*	Average weight per sq. ft.
$\frac{1}{8}$ in.	60 in. x 40 in.	2 lb. 1 oz.
$\frac{3}{16}$ in.	100 in. x 72 in.	2 lb. 7 oz.
$\frac{1}{4}$ in.	165 in. x 110 in.	3 lb. 5 oz.
$\frac{5}{16}$ in.	180 in. x 130 in.	5 lb. 2 oz.
$\frac{3}{8}$ in.	150 in. x 90 in.	6 lb. 8 oz.
$\frac{7}{16}$ in.	156 in. x 96 in.	8 lb. 2 oz.
$\frac{1}{2}$ in.	156 in. x 96 in.	9 lb. 12 oz.
$\frac{5}{8}$ in.	144 in. x 96 in.	11 lb. 6 oz.
1 in.	144 in. x 96 in.	13 lb. 0 oz.
1 1/2 in.	108 in. x 70 in.	16 lb. 4 oz.

\* These maximum sizes are not always available ex stock and may need to be specially imported

## SHEET GLASS

Nominal weight per sq. ft.	Average thickness	Largest recommended size for glazing
16 oz.	.084 inches	5 sq. ft.
21 oz.	.109 inches	9 sq. ft.
26 oz.	.132 inches	12 sq. ft.
32 oz.	.155 inches	16 sq. ft.

## Figured Rolled Glass

## Australian Patterns Available

 $\frac{1}{8}$  in. thick:

Kosciusko, Large Waverley, Small Waverley, Coogee, Pyramid, Small Pyramid, Euston, Small Euston, Spotswood, Glacier, Arrowhead, Double Rolled Cathedral, Crystalline.

 $\frac{3}{16}$  in. thick:

Rough Cast, Crystalline.

 $\frac{1}{4}$  in. thick:

Rough Cast, Crystalline.

## Average Weights:

$\frac{1}{8}$  inch—1 1/2 lbs.

$\frac{3}{16}$  inch—2 1/2 lbs.

$\frac{1}{4}$  inch—3 1/2 lbs.

## Care of Mirrors

Moisture is the principal cause for mirrors deteriorating. When fitting mirrors, avoid fixing hard against a wall. Always allow a small cavity between the mirror and the wall to provide a free circulation of air, and thus prevent condensation on the back of the mirror.

Mirrors fitted near the sea or in excessively humid climates should always be finished with special tropical backing which is impervious to moisture and prevents moisture in the atmosphere and condensation penetrating through the backing and causing deterioration of the silver film.

Care should also be exercised when painting framing of mirror backs or adjacent walls, that the paints, lacquers, etc., do not come in contact with the mirror, as oils and solvents used in the paints, etc., have a deleterious effect on the protective mirror backing, thus allowing moisture to penetrate and cause deterioration of the silver.

## Miscellaneous

## Avoid Marking Glass With Soap.

The practice of marking glass with soap will stain glass and should be avoided. Good quality glass-marking crayons are available, which will not stain the glass, will withstand a considerable amount of weathering, and can be easily removed when cleaning glass.

## Danger of Painting Glass.

Where glass is exposed to direct sunlight, there is a great risk of breakage if portion only of the glass is obscured by painting, caused by the glass absorbing a greater amount of heat in the painted portion in contrast to the unpainted portion, thus setting up unequal expansion and causing breakage.

The darker the paint the greater the risk, and the risk is greatest where the glass is held rigid in a frame and cannot expand or contract with change of temperatures.

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26  
 1

GLASS

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Suggested types of metal sheathed wood cored moulding suitable for shopfronts, etc. Supplied in  
 NICKEL SILVER (White Metal) STAINLESS STEEL, BRASS, BRONZE or COPPER.

SILLS

Full Size



TRANSOMES

Full Size



HEADS  
 STILES  
 ANGLES

Full Size



Over 200 Different Moulds Available—Ask for Complete Catalogue

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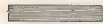


### EDGE WORK

#### GENERAL NOTES

The term applied to the hand, or machine, work done to the cut edges of glass. The edges of the glass may be ground, smoothed and polished, or ground only, according to the type of edge work required.

#### SURFACE EDGE



Rounded Edge



Flat Edge



Beveled Edge



Thumb or Bulbous



Mitre Return

The cut edge of the glass is slightly curved to form an arc of a circle of about 1 inch radius.

The cut edge of the glass is machined to a flat surface, and in the process, the surface edges are slightly arched.

A small bevel measuring 1/16 in. or less across its face, at an angle of approx. 45 deg. to the surface.

The edge of the glass is curved to shape resembling the profile of a thumb.

The edge of the glass is bevelled to any angle, the knife edge afterwards being removed by grinding, smoothing and polishing.

### BEVELLING

#### GENERAL NOTES

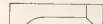
Bevelling is a hand, or machine, process whereby the surface edges of glass are ground, smoothed and polished, or ground only, according to the type of bevel required. It is unusual to leave bevels unpolished. The actual edge, unless stated otherwise, is left as cut.



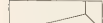
Standard Bevel



Steep Bevel



Diminishing Bevel



Taper Bevel



Scallop Bevel

A bevel measuring 1/16 in. to 1/4 in. across its face, the angle formed by the intersection of the plane of the bevel with the opposite face of the glass is about 75 deg.

Any standard bevel where the angle is more than 75 deg.

A bevel which runs out on a small radius.

A bevel which tapers off at an angle to the cut edge.

A series of scallops intersecting at the edge of the glass.

### BRILLIANT CUTTING

#### GENERAL NOTES

A decorative process employed for cutting designs on glass whereby various types of cuts are made by bringing the plate to bear on a wheel of the required section, the cuts, unless desired otherwise, being subsequently smoothed and polished.

The "vocabulary" of brilliant-cutting, as it might be called, is small, various sizes of "mitre" or V-cuts, "edge"-cuts and "panel"-cuts together with round "punts" and "hollows" or oval punts. Curves can be produced with V and edge-cuts, but not with panel-cuts, which are used for straight lines. These are combined to produce the required decoration.

#### V Cut



Panel-cut

Edge Cut



Round Punt



Oval Punt



Section



Section

Plan

Plan

### GLAZING

When ordering glass the greatest care should be taken in giving measurements. The size of pane should always be specified, the height being stated first. In all glazing, it is most important that the glass should be cut to allow it a slight play. The usual allowance made in window glazing (1/16 in. overall allowance) is illustrated below. "Tight size" implies that no glazing allowance has been made. The illustration also explains the terms "tight" or "day-light size", "glazing size", etc., which are in common use.



### PATENT GLAZING

The generic term covering all forms of glazing which rely upon channels or grooves incorporated in the glazing bar to collect and carry away water as distinct from putty and similar glazing.

### FIXING

#### GLASS WALL FACINGS

Wherever glass is fixed in or on a building, the golden rule is to adopt means of fixing whereby the glass is, if possible, entirely insulated from any strain set up by the movement of the building (no matter how caused). If the glass is so rigidly fixed to a building that temperature strains set up in the glass cannot be relieved, or if the vibration or subsidence of the building is transmitted to the glass, breakage will undoubtedly occur. All effective methods of fixing depend on this one fact for their success.



Coat-of-Arms, South Melbourne Town Hall, is an example of effective combination of "depth" sandblasting, and acid-etching. The lions are three "depth" sandblast, and treated with hydrofluoric acid, while the background is white etched. The border is a combination of sandblast and acid textures. —Oakley & Purkiss Architects

## SURFACE TREATMENTS

### ACID-ETCHING AND EMBOSSEMENT

A process whereby the surface of glass is obscured by treatment with hydrofluoric acid or its compounds. By means of etching an almost infinite variety of obscure textures may be obtained, and these in combination have considerable decorative possibilities.

#### ACID-ETCHING

A process, used in conjunction with acid-etching, where the "embossed" or "etched down" lettering or decorative work is guided with leaf metal, such as "gold leaf," and coated with a protective medium—this type of work is especially suitable for Banks, Insurance and other large Commercial companies.

#### ACID-BLASTING

The surface of the glass is obscured by means of sand, or other abrasives, propelled in the form of a jet against the surface.

There are three broad classes into which the work may be divided, "surface," "fade out," and "depth" sandblasting.

"Surface"—whereby the surface of the glass is obscured or etched.

"Fade out" gives an air-brush effect, the tones fading imperceptibly into the polished plate.

"Depth" sandblasting adds a third dimension to surface decoration and the artist has thus an almost complete gamut of formal expression, ranging from line and tone to engraved relief of varying depth.

These treatments are frequently combined and provide a very wide range of effects.

#### ACID-ETCHING

In this process the surface of the glass is obscured by hand grinding with an abrasive. In general, grinding produces a finer surface than sandblasting, the fineness of the surface depending on the nature of the abrasive. Principally used for background obscuring, in conjunction with etching.

Interior entrance doors to the Coral Room, Palais De Danse, St. Kilda, with sandblast "ship" motifs on clear plate glass.

—E. Fisher Hutton, Architect



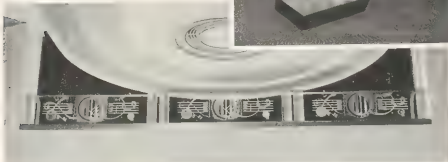
92-94 WELLS STREET, SOUTH MELBOURNE, VICTORIA



← Glass Mural—"Fade out" sandblast figure, coloured, on the polished face of black opaque glass. Hotel Australia, Melbourne.



→ Mirrored walls and columns to the Australia Cinema. Peach coloured mirror with life size sandblast design on the face. The peach mirror wall conceals two entrance doors to the projection room. Austral Cinema Melbourne



Balustrade to Orchestra Balcony, Dining-room, Hotel Chevron, Melbourne. Clear peach plate with sandblast design. The glass is lit through the edge, giving the illusion of an unsupported luminous design.  
Leslie St. Everett & Partners, Architects

92-94 WELLS STREET, SOUTH MELBOURNE, VICTORIA

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This model is on view at Head Office,  
268-70 George Street, Sydney

## The "SANDY" ADJUSTABLE LOUVRE

Commonwealth Patent (applied for) No. 15508/44

### Special Features

Manufactured from heavy, extruded and folded sections of non-ferrous metal.

The operating mechanism works at the end of the louvre with a  $3\frac{1}{2}$  in. leverage.

Glass holding channel supported firmly at two points.

The operating channel is arranged to give complete weathering when shut. One side of the channel sits snugly into a groove in the extruded back section (registered design). The other side of the channel is cut out to follow the line of the overlapping glass, at the same time resting in front of a raised edge on the glass channel holder.

The pins holding glass channel ends on to the operating member have a compression spring insert. This ensures that the channel does not get out of position and also takes up wear and rattle.

The axle pins fixed to the ends of the glass holding channels have compression springs fitted so as to take up wear, also to make sure that the channel holder is held back firmly on to face of back extruded section.

The effect of these springs is to give a firm controlling movement to the louvre.

Operating mechanism works on each end of the louvre, thus ensuring balanced closing pressure.

### DIRECTIONS

Maximum width wood to wood 3'0". Glass size will then be width of opening less 1 9/16" x 5 1/2", the two long edges being arressed or polished. An opening 3'0 1/2" high by 3'0" wide would require a 7 Louvre unit. The glass required for this opening would be as follows:—

7 Sqs. 3/16" (Plate, Rough Cast, Coldlite, Sheet or Figured Rolled) cut to 2' 10 7/16" x 5 1/2".

2 long edges of each arressed or polished.

If the opening is 3'0 1/2" high by 8'6" long, then divide the length by three. This then becomes three openings, each 3'0 1/2" high by 2'10" wide. The glass size would then be 5 1/2" x 2'10" (less 1 9/16")

—5 1/2" x 2'8 7/16".

2 long edges of each arressed or polished.

No. of Louvres	Height Correct Clearance Wood to Wood
3	1' 4 5/8"
4	1' 9 5/8"
5	2' 2 5/8"
6	2' 7 5/8"
7	3' 0 5/8"
8	3' 5 5/8"
9	3' 10 5/8"
10	4' 3 5/8"
11	4' 8 5/8"
12	5' 1 5/8"
13	5' 6 5/8"

## JAMES SANDY Pty. Ltd.

Specialists in

PAINT - GLASS - WALLPAPERS - SHOPFITTING

268-70 George Street, Sydney and at Newcastle

# PAINTS

SECTION

# 27

SECTION

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CATALOGUES 1 to 12

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**B.A.L.M.**BRITISH AUSTRALIAN LEAD MANUFACTURERS PTY. LTD.  
And Associate AUSTRALASIAN UNITED PAINT CO. LTD.**UNITED****27**

I

## WHITE LEAD CORRODERS

Manufacturers of

High Grade Paints, Varnishes, Dry Colours, "Dulux" Lacquers,  
Polishes, etc. "Dulux" Finishes.Head Office and Melbourne Factory, Cr. Williamstown Rd. and  
Salmon St., Fishermen's Bend, Vic.  
Telephone: MX 5191 (3 lines)Proprietors of Australasian United Paint Co. Ltd.,  
Paint Factory, Lipson Street, Port Adelaide, S.A.  
Telegraph Address: "United" Paints, Port Adelaide.  
Telephone: J 1131 (4 lines)New Zealand Factory: Waiheke, Lower Hutt, Wellington, N.Z.  
And at Wellington, Auckland, Dunedin, Christchurch, N.Z.

N.S.W. Sydney Office: 32 Market Street. Telephone: MA 4632.

White Lead, Paint, Lacquer and "Dulux" Factors as  
Cabrini Road, Concord, N.S.W. Telephone: LF 542  
P.O. Box 21, Concord, N.S.W.  
Telegraphic and Cable Address  
"Pigments" Melbourne, "Pigments" SydneyDistributors of "Mural" Quality Water Paints, Kalsomines  
and Texture Finishes.

Today, more than ever before, the demand is for beauty, plus permanence in decoration—and this is ensured if you use "B.A.L.M." and "UNITED" Paint Products.

In the production of the famous "B.A.L.M." and "UNITED" Paints and Varnishes, "DULUX" Finishes, "DUCO" Lacquers and a lengthy list of other specialized paint products, the large organisation of British Australian Lead Manufacturers Pty. Ltd., and its Associate, Australasian United Paint Co. Ltd., maintain three up-to-date factories, all equipped with modern research laboratories and staffs of highly skilled chemists. This also applies to the New Zealand factory at Lower Hutt, Wellington, N.Z.

In addition to constant laboratory research and experiment in Australia and overseas to formulate new pro-

ducts and improve those established, great care is taken on the practical side of paint-making and every single batch of material is tested and checked for quality and permanence so that "B.A.L.M." and "UNITED" Products are equal to every possible contingency that might arise in the wide field which embraces the protection and decoration of all types of surfaces.

The specifications given hereunder and the colour chips displayed will give essential information for most purposes. Should any unusual circumstances arise, or any difficulty be experienced, the advice of our technical staff is immediately available.

By reason of their rigid control and standardisation, high quality and beautiful decorative qualities, "B.A.L.M." and "UNITED" Paint Products specially merit your consideration.

**B.A.L.M.**

## Warranted Genuine Stack Made White Lead in Oil

The trade mark "B.A.L.M." used above "Genuine Stack Made" is an absolute guarantee that the White Lead sold under this brand contains nothing other than pure White Lead (with Linseed Oil) made by the old English, or Dutch, system of corrosion of metallic lead. This system of forming "Stacks," which are built up with successive layers of metallic lead and spent tan bark, produces a distinctive unrivalled quality of White Lead—unrivalled by any other White Lead for durability and for those physical properties which produce the finest quality paints.

Sponsored by the great majority of the old established White Lead Corroders of Great Britain, the factory was equipped in 1920 with machines re-designed, improved

in detail and built entirely in Australia. Some of these Australian designed machines have since been widely adopted in the British factories, an indication of their real value.

From 1921 to the present time, continual attention has been given to quality of product and those painters who bought and used "B.A.L.M." White Lead to their satisfaction 25 years ago—and of course still do so—may be interested to know that in fineness of grinding, in physical structure, in all desirable features, "B.A.L.M." White Lead is better than ever before.

With a background of 25 years experience under Australian conditions "B.A.L.M." will, in the manufacture of White Lead, always produce the best. Be wise, "Better Buy The Best."

BANKS &amp; CAVALLIO

**BALM**

**UNITED**

## Highest Grade Pure and Highest Grade Pure Prepared PAINT Prepared PAINT

For exterior and interior surfaces where maximum protection and beautiful decorative effects are desired.

"B.A.L.M." and "UNITED" Pure Prepared Paints are the result of many years research and experiment. They are perfectly ground and mixed by the most modern machinery. Only the finest White Lead, Zinc Oxide and pigments are used and blended with Genuine treated Linseed Oils, Liquid Driers and Turpentine.

"B.A.L.M." and "UNITED" Paints are the most satisfactory paints it is possible to produce. Revolutionary synthetic resins are incorporated in the permanent Greens and dark shades, which ensures results not hitherto believed possible. "B.A.L.M." and "UNITED" Paints have remarkable durability, gloss-retention and excellent coverage.

The cost of labour in painting is far greater than the cost of paint—it is obvious, therefore, that the paint which gives greatest protection for the longest period is the cheapest to use. "B.A.L.M." and "UNITED" Paints are made in Australia for Australian climatic conditions and their superiority in this respect has been proved.

Covering capacity: Approximately 850 sq. ft. to the gallon over a previously painted, smooth surface.

### SPECIFICATION "B"—Unpainted Timbers.

The surface must be dry and free from dust and dirt, and all knots, pitchy or sappy streaks treated with one coat of Patent Knotting.

FIRST COAT (Priming).—This is the most important of all, and for best results, "B.A.L.M." or "UNITED" Paint should be thinned with 1 or 2 parts of Raw Linseed Oil and/or Tur-

pentine to the gallon of paint—according to the nature of the surface to be painted. For porous timber thin with Linseed Oil. For hard non-porous timber a mixture of Turpentine and Linseed Oil should be used. This coat should not be applied too thickly and worked well into all holes and joints. If "B.A.L.M." or "UNITED" Undercoats are used for priming, thin with 1 quart Raw Linseed Oil, or 1 pint Turpentine, to 1 gallon of Undercoat. Nail holes and imperfections should be puttied after first coat is dry and before second coat is applied.

SECOND COAT.—Thin with 1 pint Pure American Turpentine to the gallon of "B.A.L.M." or "UNITED" Paint.

If "B.A.L.M." or "UNITED" Undercoats are used for second coating, thin with 1 pint of Turpentine to 1 gallon of Undercoat.

THIRD COAT.—Best results are obtained by using "B.A.L.M." or "UNITED" Paint as it comes from the tin. Should thinning be necessary, use Raw Linseed Oil.

### SPECIFICATION "B"—Painted Timber.

Dry paint in good condition serves as a satisfactory ground-coat. The surface must be free from loose paint, scale, oil, grease, etc. Where putty is required, the spots should be primed and puttied before applying the first coat.

FIRST COAT.—For weather-beaten, absorbent surfaces, thin "B.A.L.M." or "UNITED" Paint with 1 pint Raw Linseed Oil and 1 pint pure Turpentine to the gallon of paint.

In places where full lustre of old paint remains, such as beneath the eaves, etc., reduce with Turpentine—about 1 pint to the gallon.

SECOND COAT.—"B.A.L.M." or "UNITED" Paint as it comes from the tin.

### IRON SURFACES

Iron rarely requires more than two coats—and when dark colours are used one coat will usually be sufficient.

When two coats are necessary, reduce the first with Turpentine—about 1 pint to the gallon of paint.

## **BALM and UNITED** Highest Grade Zinc Paints

"B.A.L.M." and "UNITED" Highest Grade Zinc Paints are prepared from Genuine Zinc Oxide together with the finest quality colours required to produce the standard shades, and ground in Genuine Pale Boiled Linseed Oil with the necessary quantity of Pure Turpentine and Liquid Drier added.

"B.A.L.M." and "UNITED" Highest Grade Zinc Paints are guaranteed to conform to the regulations of the State Advances Corporation, the Public Works Departments of the State of Queensland, and to be strictly within the regulations governing the Queensland Health Amendment Act of 1937.

"B.A.L.M." and "UNITED" Highest Grade Zinc Paints are suitable for both interior or exterior decoration, drying with a full gloss finish which will retain its lustre and colour under prolonged exposure conditions.

### DIRECTIONS FOR USE.

#### NEW WORK

PRIMING COAT.—Apply "B.A.L.M." or "UNITED" Zinc Paint UNDERCOAT reduced to the proportion of 1 pint of a gallon of Raw Linseed Oil to the gallon of UNDERCOAT.

INTERMEDIATE COAT.—Apply "B.A.L.M." or "UNITED" Zinc Paint UNDERCOAT reduced in the proportion of 1 pint of Raw Linseed Oil and 1 pint of Pure Turpentine to the gallon of UNDERCOAT.

FINISHING COAT.—Apply "B.A.L.M." or "UNITED" Highest Grade Zinc Paint as contained in the tin. If necessary, thin with a small quantity of Raw or Pale Boiled Linseed Oil only.

#### OLD WORK

For renovating, two coats are usually sufficient.

Where the surface is excessively weathered and absorbent, the first coat should be "B.A.L.M." or "UNITED" Zinc Paint UNDERCOAT, reduced in the proportion of 1 pint of Raw Linseed Oil and 1 pint of Pure Turpentine to the gallon of UNDERCOAT.

Where the surface is in reasonably good condition, apply "B.A.L.M." or "UNITED" Zinc Paint UNDERCOAT reduced to a brushing consistency with Pure Turpentine only.

FINISHING COAT.—Use "B.A.L.M." or "UNITED" Highest Grade Zinc Paint as contained in the tin. If necessary, thin with a small quantity of Raw or Pale Boiled Linseed Oil only.

IMPORTANT.—Allow ample time for drying between coats to ensure a satisfactory surface and greater durability. Do not apply paint on wet surfaces or under damp conditions.

B.A.L.M.

BRITISH AUSTRALIAN LEAD MANUFACTURERS LTD. LTD.

B.A.L.M.

# B.A.L.M. Flat Wall Finish and UNITED Flatkote

FOR INTERIOR DECORATIONS, WALLS AND CEILINGS

For use on plastered walls, woodwork, metal ceilings, wallboard and all interior surfaces where Oil or Water Paints are generally used

"B.A.L.M." Flat Wall Finish and "UNITED" Flatkote are of superfine quality, leadless and non-poisonous. Their beautiful matt finish is unsurpassed for interior decoration in the home, for offices, hospitals, public halls, etc. The beautiful shades available are chosen to suit the most up-to-date ideas on interior decoration and enable the architect to use his colour sense with the most harmonious results. Further, these colours have a very high light-reflection factor which helps to increase the apparent size of halls and rooms. "B.A.L.M." Flat Wall Finish and "UNITED" Flatkote create a restful, cheerful atmosphere with their soft, glowing colours.

Made in 10 colours and white. Further shades can be made by intermixing colours and white. All colours washable, lime-proof and light fast, easy to use and spread out evenly with high covering capacity.

Their slow set-off leaves a wet-edge which enables large areas to be brushed in and always dry with a perfect matt film.

## SPECIFICATION "A"—New Concrete, Plaster, Cement, etc., Surfaces.

**PRIMING.**—Apply a priming coat of "B.A.L.M." or "UNITED" Flatkote are of sufficiently heavy consistency to allow for suitable reduction for various coats.

**FIRST COAT.**—When the surface is thoroughly dry, apply a coat of "B.A.L.M." or "UNITED" Flatkote. The wall will overcome suction, and seal any alkali which may be present.

**SECOND COAT.**—Reduce "B.A.L.M." Flat Wall Finish or "UNITED" Flatkote to a satisfactory brushing consistency with equal parts of Genuine Raw Linseed Oil and Pure Turpentine.

# B.A.L.M. and UNITED Cement and Waterproof Paints

For interior or exterior concrete surfaces, plaster walls and brickwork.

These paints, while designed primarily for waterproofing to prevent damp, also serve as a durable protective agent and give excellent decorative effects. Unmistakable stains due to alkali salts are covered, and the resultant smooth surface offers little hold for soot, dirt, etc.

## SPECIFICATION "1"—New Work.

**PRIMING.**—Apply one or two coats "Dux" 5/6 745 Cement Primer, according to the condition of the surface.

**FIRST COAT.**—"B.A.L.M." or "UNITED" Cement and Waterproof Paint thinned with Pure Turpentine, 1 pint to the gallon.

**FINISHING.**—"B.A.L.M." or "UNITED" Cement and Waterproof Paint as it comes from the tin.

## SPECIFICATION "H"—Surfaces which have weathered for a satisfactory period.

Before painting is commenced, all traces of dust must be removed thoroughly with a wire brush. It is essential that the surface be dry.

**THIRD COAT.**—Reduce "B.A.L.M." Flat Wall Finish or "UNITED" Flatkote to a satisfactory brushing consistency with Pure Turpentine only.

## SPECIFICATION "B"—New Wood Surfaces.

**FIRST COAT.**—Apply a priming coat of "B.A.L.M." or "UNITED" Decorators' Heavy Bodied White 32 reduced with 1 gallon Raw Linseed Oil, 1 gallon Pure Turpentine and 1 pint head oil to the gallon of paint.

**SECOND COAT.**—"B.A.L.M." Flat Wall Finish or "UNITED" Flatkote reduced to a free brushing consistency with Raw Linseed Oil.

**FINISHING COAT.**—"B.A.L.M." Flat Wall Finish or "UNITED" Flatkote reduced sparingly with Pure Turpentine only.

## SPECIFICATION "C"—Wall Boards.

Apply a priming coat of "B.A.L.M." or "UNITED" Decorators' Heavy Bodied White 32 reduced with 1 gallon of Pure Turpentine to the gallon of paint.

As the fibres are raised by the application of the priming coat, it is recommended that the surface is lightly sanded with fine sandpaper before applying the "B.A.L.M." Flat Wall Finish or "UNITED" Flatkote.

Owing to the uneven surface of this material, it is essential to apply three coats of "B.A.L.M." Flat Wall Finish or "UNITED" Flatkote, reducing each coat as in Specification "A".

## SPECIFICATION "D"—Metal Ceilings.

**PRIMING.**—Apply a priming coat of "B.A.L.M." or "UNITED" Decorators' Heavy Bodied White 32 reduced with 1 gallon of Turpentine to 1 gallon of paint.

**FIRST COAT.**—"B.A.L.M." Flat Wall Finish or "UNITED" Flatkote reduced to a free brushing consistency with equal parts of Raw Linseed Oil and Turpentine.

**FINISHING COAT.**—"B.A.L.M." Flat Wall Finish or "UNITED" Flatkote reduced sparingly with Turpentine only. For best results, and to eliminate metal reflections on embossments, the finishing coat should be lightly stippled.

**PRIMING.**—Apply one or two coats "B.A.L.M." or "UNITED" "CEM-SEAL" (Cement Sealer), either neutral or a shade approximating the finish required.

**FIRST COAT.**—"B.A.L.M." or "UNITED" Cement and Waterproof Paint thinned with 1 pint of pure Turpentine to the gallon.

**FINISHING COAT.**—"B.A.L.M." or "UNITED" Cement and Waterproof Paint as it comes from the tin.

## SPECIFICATION "C"—Aged Surfaces.

Lined surfaces must be quite free of dust, etc.

**FIRST COAT.**—"B.A.L.M." or "UNITED" Waterproof Paint thinned with 1 pint of pure Turpentine to the gallon.

**SECOND COAT.**—"B.A.L.M." or "UNITED" Waterproof Paint as it comes from the tin.

## SPECIFICATION "D"—Aged Surfaces Previously Painted.

As dirt, loose scaled paint, etc., must be removed and chipped, or weathered portions touched up with "B.A.L.M." or "UNITED" "CEM-SEAL" "B.A.L.M." or "UNITED" Cement and Waterproof Paint is applied as it comes from the tin, the number of coats depending on the condition of the surface.



**BALM**

BRITISH AUSTRALIAN LEAD MANUFACTURERS PTY. LTD.

**BALM****27**  
**I****BALM "DUX" Hi-Speed Enamel**

A quick-drying, durable and waterproof, high-grade, general purpose Enamel for wood or metal surfaces requiring a high gloss, porcelain-like finish. By mixing the standard colours, a wide variety of striking shades can be produced.

"B.A.L.M." DUX HI-SPEED ENAMEL is easily applied, flows on smoothly, leaving no laps or brush marks. Supplied in white, clear and colours.

The surface should be clean, dry, and free from dust, dirt, grease and wax.

**UNPAINTED SURFACES.**

FIRST COAT.—Reduce with 10 per cent. Genuine Turpentine. Allow to dry and solt with 250 wet-or-dry paper.

SECOND COAT.—"DUX" Enamel as supplied in the tin.

NOTE.—Surfaces with an open grain should first be filled with Paste Wood Filler.

**PREVIOUSLY PAINTED SURFACES.**

One coat is usually satisfactory on an old paint surface in good condition, except when light colours are to be applied over a dark coloured surface.

If "DUX" Enamel becomes too heavy for easy application, thin with Pure Turpentine.

**BALM and UNITED Structural Steel Paints**

Specially prepared for structural steel, bridges, pipe lines, outside of water tanks, etc. The pigments are selected for their known rust-inhibitive properties; the vehicle is a combination of drying oils, producing a film with very high moisture-resisting properties that effectively prevents oxygen from acting on the metal surface.

Covering capacity: Approximately 900 square feet per gallon on a previously painted, even surface.

**NEW WORK.**

All sheet metal or steel should be carefully wire-brushed to remove all rust and scale, and badly rusted spots emery-papered until the metal is bright and clean. All surfaces must be clean and dry, and grease or oil washed off with Mineral Turpentine.

New galvanised iron should be primed with "Dulux" Galvanised Iron Primer before applying "B.A.L.M." or "UNITED" Structural Steel Paints.

**SPECIFICATION "A"—THREE-COAT WORK.**

FIRST COAT.—"Remix" Genuine Ready Mixed Red Lead.

SECOND COAT.—"B.A.L.M." or "UNITED" Structural Steel Paint thinned with 1 pint of Turpentine to the gallon.

THIRD COAT.—"B.A.L.M." or "UNITED" Structural Steel Paint as contained in tin.

**SPECIFICATION "B"—TWO-COAT WORK.**

FIRST COAT.—"Remix" Ready Mixed Red Lead to which has been added 50 per cent. by volume "B.A.L.M." or "UNITED" Structural Steel Paint, a selected shade.

SECOND COAT.—"B.A.L.M." or "UNITED" Structural Steel Paint, selected shade, as contained in tin.

**SPECIFICATION "C"—OLD WORK.**

Clean away with wire brush all loose scale or rust. Where bare metal is exposed, apply a priming coat of Structural Steel Paint selected shade.

FINISHING COAT.—"B.A.L.M." or "UNITED" Structural Steel Paint, selected shade, as contained in tin.

**BALM and UNITED Roof Paint**

A high-grade, rust-inhibitive paint for galvanised roofs and metal surfaces, subjected to normal conditions and exposure.

Covering capacity: Approximately 900 square feet per gallon on a previously painted, smooth, even surface or new iron.

**SPECIFICATION "A"—Unpainted Surfaces.**

Aged sheet metal or steel must be carefully cleaned with a wire brush to remove all rust and scale. Badly rusted spots should be rubbed with emery-paper until the metal is clean. All surfaces must be clean and dry, and grease or oil removed with Mineral Turpentine.

PRIMING.—New galvanised iron should be primed with "Dulux" Galvanised Iron Primer. If galvanised iron has been exposed for 12 months, priming is unnecessary.

FIRST COAT.—"B.A.L.M." or "UNITED" Roof Paint thinned with 1 pint of Turpentine to the gallon of paint.

SECOND COAT.—"B.A.L.M." or "UNITED" Roof Paint, selected shade.

If in certain cases when painting new work, one coat is sufficient, use "B.A.L.M." or "UNITED" Roof Paint as contained in tin.

**SPECIFICATION "B"—PAINTED SURFACES**

Loose scale or rust should be cleaned away with a wire brush and bare metal touched up with a priming coat of "B.A.L.M." or "UNITED" Roof Paint, selected shade.

FINISHING COAT.—"B.A.L.M." or "UNITED" Roof Paint, selected shade, as contained in tin, without thinning.

—BANKS' CATALOGUE

**BALM**

NEW AUSTRALIAN LEAD MANUFACTURING CO. LTD.

**UNITED**

## "PETRUMITE" Imitation Stone Paint

"PETRUMITE" is a prepared Oil Paint which provides an extremely durable finish for either interior or exterior walls, etc. When dry it feels like stone, wears like stone, and it will give outstanding service. It can be applied to either brick, stone, metal, cement, plaster or wood. If desired, it can be lined out to represent stone blocks, or it may be stippled to resemble very closely a roughcast effect. "PETRUMITE" has greater obliterating power than ordinary paint. It may be scrubbed with soap and water, and should outlast four or five coats of paint or enamel. It is waterproof and weatherproof.

For interior and exterior use "PETRUMITE" is available in four colours matching the following stones:—

Light Bath stone  
Dark Bath-stone  
Portland Stone  
Cream Buff

Covering capacity: Approximately 200 sq. ft. per gallon (CEMENT, ETC., SURFACES).

Where "PETRUMITE" is to be used over cement, plaster, concrete, etc., new work should be primed with "Dulux" 516-745 Cement Primer, while surfaces which have aged for over six months should be primed with "BALM" or "UNITED" "CEM-SEAL."

### WOOD SURFACES

New wood surfaces should be primed with a coat of "BALM" White Lead in Oil reduced with Raw Linseed Oil and Turpentine, with sufficient Drier added to conform to an orthodox Lead Primer or Prepared Paint

Undercoat. Reduce to brushing consistency with Raw Linseed Oil only.

### METAL SURFACES.

Metal surfaces should receive a priming coat of "BALM" White Lead in Oil reduced to brushing consistency with equal parts of Raw Linseed Oil and Turpentine, with the necessary quantity of Drier added, or Prepared Paint Undercoat, reduced to brushing consistency with Turpentine only.

Previously painted surfaces in good condition need no Primer.

Bare patches should be touched up with a suitable Primer.

To ensure compact films, which are essential to obtain best results, two coats of "PETRUMITE" must be applied fairly heavily. The area to be painted should not exceed 200 sq. ft. per gallon for one-coat work.

### APPLICATION ALL SURFACES

FIRST COAT.—"PETRUMITE" is applied by brush and, when tacked, it should be stippled lightly and allowed to dry overnight.

SECOND COAT.—A full flowing coat, stippled with a soft brush slightly moistened with Turpentine.

If a saven stone effect is required, leave over while wet. If desired, the surface may be stippled lightly to ensure uniformity.

When the last coat is nearly hard, joints may be cut out to give the effect of pointing, and the lined with an ordinary 1 1/2 pint of suitable colour.

"PETRUMITE" does not clog the brushes, which, after use, are easily cleaned with Mince Turps.

## **BALM** and **UNITED** "CEM-SEAL" (Cement Sealer)

Colours: Cream, Pink, Green, Grey, Blue, White and Neutral.

An effective "sealer" is essential for perfect work on cement surfaces.

Whether it's the alkali in new cement or the porosity of old cement with which you have to contend, "BALM" or "UNITED" "CEM-SEAL" will do a better job, give a more perfect "seal," protect the paint, allow it to retain its original appearance, make the job more economical by stopping the soaking-up action of cement.

All moisture should be allowed to evaporate out of new cement, then a sealing coat of "Cem-Seal" applied. This

will effectively seal the surface and give protection to the superimposed paint materials. "Cem-Seal" is scientifically formulated to prevent the reaction of alkali on the surface of paints.

The older and drier cement becomes, the less chemical action it has on paint, but, naturally, it has increased porosity. Here, again, you will get the best results by using "BALM" or "UNITED" "Cem-Seal" as a priming coat, because its medium, in addition to having high resistance to the action of alkali, has particularly good filling and sealing properties which counteract the natural action of cement.

## **BALM** and **UNITED** "PARKOTA" Floor and Paving Paint

"BALM" and "UNITED" Floor and Paving Paints are durable, protective and decorative finishes for interior or exterior cement and wood floors, giving a colourful finish that stands severe wear.

"BALM" and "UNITED" Floor and Paving Paints are made with the highest quality pigments ground in specially prepared mediums with water-resisting properties. They dry with a hard, washable, glossy film.

### SPECIFICATION "A"—New Cement.

At least 30 days aging of new cement should be allowed before painting.

The surface must be thoroughly dry and free from dirt, dust and grease.

A ground coat of "BALM" or "UNITED" "CEM-SEAL" (Cement Sealer) should be applied and allowed to dry overnight.

Two coats of "BALM" or "UNITED" Floor and Paving Paint are required to ensure a satisfactory film for traffic conditions on new cement.

### SPECIFICATION "B"—Aged Cement—Unpainted.

Two coats of "BALM" or "UNITED" Floor and Paving Paint are necessary, the first coat reduced with 1 pint of Turpentine to 1 gallon of paint. For second coat, use paint as supplied in the tin. Allow 24 hours between coats. Under normal drying conditions a floor may be used the day after application.

### SPECIFICATION "C"—Wood Floors—Unpainted.

Two coats should be applied according to directions in Specification "B."

### SPECIFICATION "D"—Renovating.

For renovating, one coat is usually sufficient. "BALM" or "UNITED" Floor and Paving Paint should be used as supplied in the tin.

The application of wax or polish to painted floors or patina is not advisable, as these have a detrimental effect on the drying if not completely removed prior to the re-painting operation.

**BALM**BRITISH AUSTRALIAN LEAD MANUFACTURERS LTD.  
And Associate, AUSTRALASIAN UNITED PAINT CO. LTD.**UNITED****27**  
**I**

## THE SYNTHETIC FINISH

### Supersedes Enamels and Varnishes

"DULUX" is a distinctly different type of finish, having characteristics that make it one of the most outstanding developments in interior and exterior finishing of all kinds.

Its extreme durability is due to the incorporation of special synthetic resins, formulated after years of research and experiment. These resins are found only in "Dulux." The "Dulux" film is tougher and more elastic than orthodox finishes, giving "Dulux" extreme resistance to cracking or chipping. The life of "Dulux" is longer, it retains its colours and gloss in spite of severe wear and exposure. "Dulux" is hygienic, washable, quick-drying, easy to apply and self-levelling. It is used with great success on almost every type of surface. Interior decoration of all kinds, furniture, bathrooms, etc., automotive re-finishing and marine work, are a few examples showing how widely it is used.

"Dulux" Architectural Gloss White is particularly noteworthy. It is a Winter White than any previous finish—it stays white indefinitely when used as an indoor finish.

"Dulux" RC147 Clear (superseding varnish) for natural-finish timber, gives a perfect gloss appearance that is maintained over long periods.

It is understood that all surfaces to be finished in "Dulux" are clean, free of dust, dirt, grease, oils, etc. Loose paint scale, etc., must be scraped and brushed away. Washing with Mineral Turpentine will remove grease. It is important that no other paints or enamels are mixed with "Dulux" when thinning is required, only Genuine Turpentine, or genuine "Dulux" Thinners, may be used. This is because the special type of vehicle used for "Dulux" is based on synthetic resins that are chemically different compounds from orthodox paints, enamels or varnishes.

Though we seem to stress that great care be taken in the application of "Dulux," it is not more than that reasonably necessary with any painting or enamelling, and the far longer life that correctly-applied "Dulux" has amply compensates for any extra attention to detail.

Obtainable in 32 Decorative Shades, Black, White and Clear.

For further range of Industrial and Automotive Colours see special colour cards.

## Interior Decoration

### SPECIFICATION "A"—Plaster Walls Unpainted.

**PRIMING**—Prime new plaster surfaces with "B.A.L.M." 515-745 Cement Primer. Aged plaster should be treated with 700-100 White or 740-110 Neutral Cement Sealers for "Dulux." Allow overnight drying.

**FIRST COAT**—338-Line "Dulux"—selected shade. After overnight drying, buff lightly with 320 wet-or-dry paper slightly moistened with water.

**SECOND COAT**—338-Line "Dulux"—selected shade—and allow 24 hours dry overnight.

### SPECIFICATION "B"—Unpainted Timber

**PRIMING**—Over a clean surface apply one coat of 366-56 "Dulux" White or 368-56 "Dulux" Grey Primer and allow 8 hours drying.

**PUTTY** with "Dulux" 365-67 White or 365-69 Grey Glazing Putty, where necessary. Dry out 5-6 hours, depending on depth of application.

**FIRST COAT**—One coat of 364-27 "Dulux" White or 366-26 "Dulux" Grey Brushing Surface. Dry out overnight.

Sand with 320 wet-or-dry paper.

**SECOND COAT**—Selected shade of "Dulux"—overnight drying.

Sand lightly with 320 wet-or-dry paper slightly moistened with water.

**THIRD COAT**—"Dulux"—selected shade. Dry out overnight.

### SPECIFICATION "C"—Open-grain Timber.

Fill with "Dulux" Paste Wood Filler by thinning the Wood Filler with Genuine Turpentine to a thick brushing consistency and brush or sweep it on the wood surface in the direction of

the grain. After 5-10 minutes, when the Wood Filler has dried to a dull surface, it should be sanded into the crevices of the wood by wiping across the grain with a coarse rag, using considerable pressure. Allow to dry overnight.

Using a fine glass paper or 320 wet-or-dry paper, dry-sand the surface to remove marks caused in the preceding operation. Omitting the Priming, finish as Specification "B."

### SPECIFICATION "C.1"—Clear Finish on Timber.

If a Clear Finish is required for Specifications "B" or "C," commence with a coat of "B.A.L.M." or "UNITED" Flat Oil Stain. After overnight drying, if necessary, apply Paste Wood Filler (Specification "C").

**FIRST COAT**—"Dulux" RC147, Clear. Dry out overnight. Sand lightly with 320 wet-or-dry paper slightly moistened with water.

**SECOND COAT**—"Dulux" RC147, Clear.

### SPECIFICATION "D"—Previously Painted Surface.

Wash down with Mineral Turpentine, sand lightly with 320 wet-or-dry paper moistened with Mineral Turps. Dry with clean cloth.

**FIRST COAT**—338-Line "Dulux," selected shade, or Clear. Dry out overnight. Sand lightly with 320 wet-or-dry paper moistened with water.

**SECOND COAT**—"Dulux," selected shade.

**WHITE FINISH**—When a White Finish is required for interior surfaces, use "Dulux" 366-666 Architectural Gloss White for a medium-gloss, or 368-691 Non-Yellowing White for a high-gloss effect.

BANKS &amp; CATALOGUE



## SUPER-MATT A Synthetic Velvet Finish

"DULUX" Super Matt, for interior use only, is a finish of superlative velvet-soft, light-reflecting appearance that creates new standards for beauty and durability. It is now available in a new range of 16 beautiful shades which have been chosen to suit the most up-to-date ideas on interior decoration. You are assured that "DULUX" Super-Matt is the perfect interior matt finish with extra qualities no other matt finish possesses.

"DULUX" Super-Matt brushes out easily, is self-levelling and dustproof in one hour. It has excellent adhesion and its extreme toughness and smoothness give it great resistance to wear and tear. All colours are light-fast and lime-proof.

### SPECIFICATION "A"—New Masonry Surfaces

All moisture should have evaporated.  
PRIMING.—One coat of "DULUX" No. 761 Cement Primer thinned 10 per cent with "B.A.L.M." D.8284 Thinner. Allow 15 hours' drying.

On particularly rough surfaces apply a further coat of Primer. Undercoat. Allow 15 hours' drying.

FIRST COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine. Dry out overnight.

SECOND COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine and allow to dry overnight.

### SPECIFICATION "B"—Aged Masonry Surfaces. A m-painted

PRIMING.—One coat of 760-102 White Cement Sealer for "DULUX". Dry out overnight.

FIRST COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine. Dry out overnight.  
SECOND COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine. Dry out overnight.

### SPECIFICATION "C"—Previously Painted Surfaces.

Kalsomine or other water paints must be removed and the surface treated as Spec. A or B.  
For all surfaces painted with orthodox oil or synthetic materials, it is necessary to rub down the surface with fine sandpaper and apply 2 coats of "DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine, allowing overnight drying between coats.

### SPECIFICATION "D"—Unpainted Timber.

Prime with one coat of 760-05 White Oil Base Primer for "DULUX". Allow 24 hours' drying.

FIRST COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine. Dry out overnight.  
SECOND COAT—"DULUX" SUPER-MATT reduced 10 per cent with Genuine Turpentine. Dry out overnight.

Where the surface is porous or a higher gloss finish is required, the first coat should be a mixture of equal parts of Super-Matt, of the shade selected and 388-026 "DULUX" Gloss White.

A still higher gloss is desired, an addition of up to 25 per cent 388-167 "DULUX" Clear can be made to the 1st coat.



## 387-Line Permanent Hi-Gloss PAINT

"DULUX" Hi-Gloss Paint is so radically different from all orthodox paints that there are actually no grounds for comparison. Its formulation embraced entirely new fields based mainly on the discovery of the synthetic resins that were originally responsible for the production of "DULUX" Finishes.

"DULUX" Hi-Gloss Paint is unequalled for interior or exterior use as a decorative and protective agent of unequalled durability.

Care must be taken to ensure thorough stirring of the paint before application. The surface to be painted must be clean.

As "DULUX" Paints have very quick-drying properties, they should not be applied in the same manner as orthodox paints, but rather laid on instead of being brushed in. In hot weather, allowance must be made for the faster evaporation of solvents by adding more thinner.

Where thinning is necessary, use No. D.8200 "DULUX" Thinner or Pure Spirits of Turpentine.

The 761-Line of Old Base Primers are recommended for use on wood under "DULUX" 387-Line and are available in the following range of colours: Cream, Pink, Light Stone, Light Grey, Green and Brown. They are hard drying Primers and should be thinned with mineral turps or Pure Turpentine only. Linseed Oil must not be added to 761-Line Primers when used under 387-Line "DULUX" Paint.

### SPECIFICATION "A"—New or Burnt-off Timber Surfaces.

Seal all knots with "DULUX" Aluminium and allow overnight drying.

FIRST COAT (Priming).—Apply one coat 761-Line Primer for "DULUX" reduced with 1 pint of Turpentine per gallon.

SECOND COAT.—Apply 387-Line "DULUX" Paint as received in the tin, or, if brushing requires easing, reduce slightly with D.8200 Thinner or Pure Spirits of Turpentine.

FINISHING COAT.—As for second coat. Allow overnight drying between coats.

### SPECIFICATION "B"—Previously Painted Surfaces.

Remove old paint showing poor adhesion, cracking, blistering or peeling. Hard glossy surfaces should be sanded to ensure adhesion.

FIRST COAT.—Apply one coat 761-Line Primer for "DULUX" reduced with one pint of Turpentine per gallon.

SECOND COAT.—Apply 387-Line as received in the tin, or, if brushing requires easing, reduce slightly with D.8200 Thinner or Pure Spirits of Turpentine. Allow overnight drying between coats.

### SPECIFICATION "C"—Cement Surfaces.

For new cement surfaces apply one coat of "B.A.L.M." 516-761 Cement Primer after allowing the cement to dry out thoroughly.

For old cement surfaces apply one coat of "B.A.L.M." White Cement Sealer 760-102.  
Finish with two coats of "DULUX" Paint as specified for new wood surfaces irrespective of whichever type of Sealer is used.

### SPECIFICATION "D"—Metal Surfaces.

PRIMING.—Where extreme moisture conditions exist, apply "DULUX" 387-10 Sealer Primer.

For normal conditions prime with "DULUX" 387-11 Red Lead Primer or 387-12 Metal Protecting Primer, Red.

FIRST and SECOND COATS.—Apply two coats of "DULUX" Paint, as Specification "A".

Brushes and equipment may be cleaned with No. D.8200 Thinner or Pure Spirits of Turpentine.

# B·A·L·M

Highest Grade  
Pure Prepared

# UNITED

27

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## PAINT



Yellow



Champagne



Ivory Cream



Orange



Ivory



Middle Stone



Warm Stone



Red



Verdure



Light Apple Green



Silver Gray



Terra Cotta



Light Stone



Forest Meadow Green



Meadow Blue



Pop Green



Green



Golden Brown



Leather Color



Lavender



Red



Forest Green



Pale Cream



Velvet Brown



Azule Blue



Forest, Imp. Ivy Green



Royal Blue



Dark Stone



Pink Blue



Chocolate Brown



Mid Cream



Forest, Bright Moss Green



Indian Red



Deep Rich Brown



Sea-De-Nil



Burgundy Brown



Dove Gray



Everest Green



Maroon



Bronze Green

Also made in Gloss White, Black and Inside Flat White.

and Tudorville Cream, Pink, Light Stone, Light Gray, Green, Brown.



From the collections of Sydney Living Museums / Historic Houses Trust of NSW

For Automotive & Industrial  
"DULUX" see special colour  
cards, available on request.

+ + +

Use Dulux "Super-matt" the  
Synthetic Finish 368-line for  
Artistic Interior Decoration.



THE SYNTHETIC FINISH  
SUPERSEDES  
ENAMELS  
and VARNISHES

*CA Distinctive Exterior and Interior Finish*  
**388 BRUSHING LINE**  
Decorative Range of 32 Colours

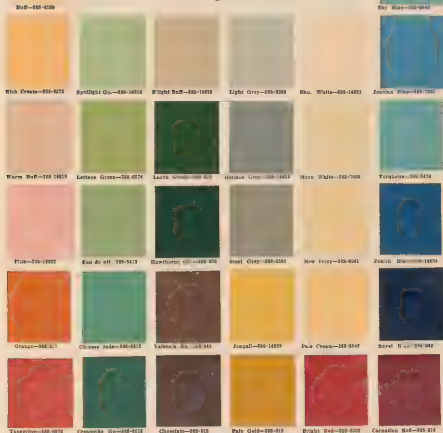
For General Exterior House  
Painting use "DULUX"  
Paint Type 387 Line.

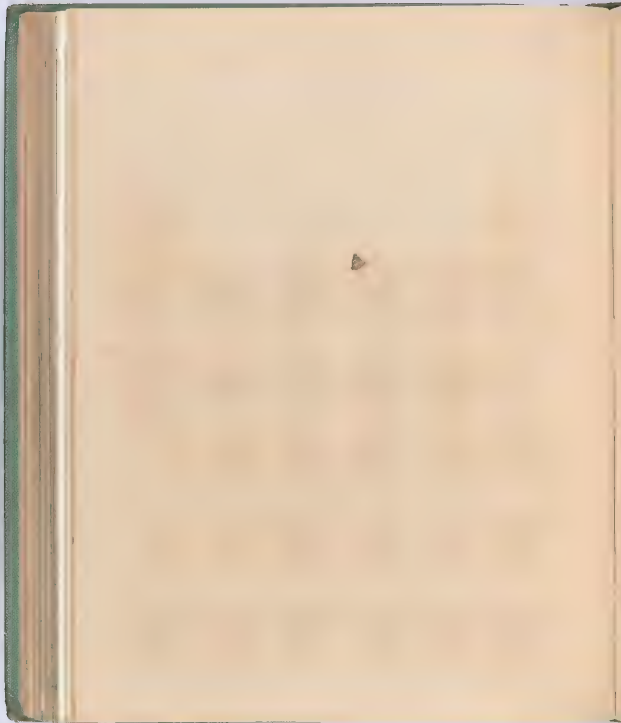
+ + +

"Dulux" 388 Line is also available in:

388-076 Black.  
388-075 White.  
388-032 Architectural medium Gloss  
388-031 Interior White  
388-091 Interior non-yellowing High  
Gloss White.  
388-97 Exterior White  
B.C. 147 Clear

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# B·A·L·M

## FLAT WALL FINISH

806-LINE

"DULUX" SUPER-MATT  
is a Finish of Superlative velvet-  
like appearance. Readily  
Washable, with outstanding  
Durability and Resistance  
to Fading.

The Ideal Flat Oil Paints  
For  
Interior Decoration  
+  
Washable, Durable  
and  
Non-fading



### SUPER-MATT

The Synthetic Velvet Finish

368-LINE

"Balm" Flat Wall Finish, "United" Flatkote and "Dulux" Super-Matt are  
all available in the colours shown below.

# UNITED

## FLATKOTE

806-LINE

27  
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"DULUX" SUPER-MATT  
creates new standards of beauty  
for Artistic Interior Decoration.  
A truly unique and distinctive  
Finish.

PALE IVORY

PEACH

IVORY

BLOSSOM PINK

BOHEMIAN CREAM

PEARL GREY

BUSINESS IVORY

PASTEL GREEN

LIGHT BUFF

POWDER BLUE

Alb. WHITE



For Perfect "Paint Styling"—Use MURALO PRODUCTS.



# MURAL-TONE

WASHABLE

## Wall and Ceiling Paint



27  
1 a

THE REVOLUTIONARY WATER PAINT FOR INTERIOR DECORATION

No Other Water Paint Offers All These Advantages

- SEEDS TO UNDERCOAT
- ECONOMICAL AND TIME-SAVING
- CAN BE APPLIED ON GREEN CEMENT
- WATER-PROOF AND LIGHT FAST COLOURS

### MURALO PROCESS

#### MURAL-TONE WHITE

The Whitest White Ever Made

MURAL-TONE White is 82 per cent. light reflective, non-yellowing, easily cleaned. It gives a perfect, flat, non-glaring finish. MURAL-TONE White is especially suitable for all buildings where cleanliness and maximum light are required—factory workshops, industrial buildings, and hospitals (operating theatres, etc.), particularly

An endless range of exquisite pastel tints can be made through the simple intermixing with each other of the shades displayed on this card and MURAL-TONE White.

11—PASTEL CREAM

MURAL-TONE WHITE

7—CREAM

16—OYSTER WHITE

1—IVORY

13—PASTEL GREEN

14—PASTEL BLUE

12—PASTEL PINK

8—BUFF

3—LIGHT GREEN

10—PALE BLUE

17—PRINCESS

4—TAN

5—PEA GREEN

15—LIGHT GREY

6—PALE ROSE

MADE IN AUSTRALIA BY

**MURALO COMPANY (Australia) Pty. Ltd.**  
**Port Adelaide—Melbourne—Sydney**

RANDALL'S CATALOGUE



For Perfect "Paint Styling"—Use MURALO PRODUCTS.

# "CALCIMO"

THE SUPERIOR DECORATIVE  
KALSOMINE



# "MURALO"

THE SUPERFINE  
KALSOMINE

27  
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WHITE 100	PARCHMENT WHITE 101	PASTEL CREAM 102	RICH IVORY 103	DEEP CREAM 104	LIGHT TAN 105
LIGHT FRECKLE 106	SKIN YELLOW 107	TOPAZ YELLOW 108	PAWN 109	PASTEL GREEN 110	JADE GREEN 111
ROSE 112	DAWN PINK 113	PINK SALMON 114	LOTUS PINK 115	PASTEL BLUE 116	TULIP BLUE 117
SUNSHINE CREAM 118	PUFF 119	WARM PUFF 120	LIGHT GREY 121	LIGHT BLUE 122	LIGHT GREEN 123

## "MURALO" CEMENT PAINT

Preserves and Decorates Porous Concrete and Masonry Surfaces

BONE WHITE—01

IVORY—02

PAWN—03

CREAM—04

PUFF—05

GREEN—06

BLUE—07

LIGHT GRAY—08

PEARL GRAY—09

BRICK RED—10

ALSO MADE IN WHITE

## "MURALO" Mill White and Paste Paint

The Superior Water Paint

ALSO MADE IN WHITE

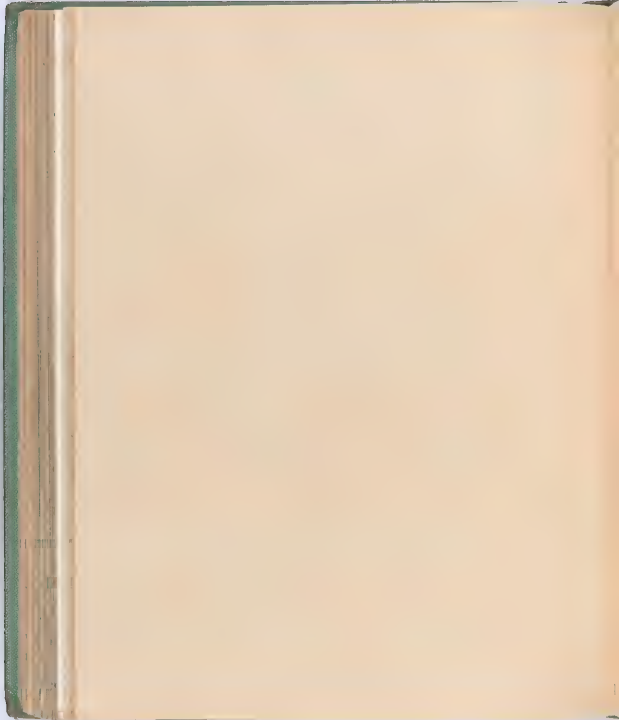
PALE CREAM—11

MID. CREAM—12

DEEP CREAM—13

**MURALO COMPANY (Australia) Pty. Ltd.**  
**Port Adelaide—Melbourne—Sydney**

RAMSAY'S CATALOGUE



From the collections of Sydney Living Museums / Historic Houses Trust of NSW

# MURALO COMPANY (AUSTRALIA) PTY. LTD.

*Leading Manufacturers of Quality Water Paints in Paste and Powder Form*

27

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MELBOURNE

FACTORY

N.S.W. BRANCH

See Office: 52B Collins Street.  
Phone: MU 2542

Lipson Street, Port Adelaide, S.A.  
Phone: J 1910

Cabarita Road, Concord  
Phone: UP 042

DISTRIBUTORS IN ALL STATES

"MURAL-TONE"

"CALCIMO"

"MURALO" KALSOMINE

"MURALO" CEMENT PAINT

Exterior "MURAL-TONE"

"SPACKLE" Surfacing Compound

"MURALO" Mill White & Paste Paint

*"For Perfect Paint Styling"*



## "MURAL-TONE" WALL AND CEILING PAINT

Washable, Limeproof and Light-fast

(See Colour Chip Sheet)

### DESCRIPTION AND ADVANTAGES.

"Mural-tone" is a high-grade casein-vehicle paint packed in paste form for interior use. "Mural-tone" is one of the major achievements of the Muralo Laboratories and is unequalled for its lasting beauty and ease of application. Its much lower cost and maintenance costs give "Mural-tone" a further distinct advantage over other finishes in the oil-paint price range.

"Mural-tone" meets every decorating requirement—speed, beauty, economy and durability. The paint pigments used in its manufacture are noted for their extraordinary hiding and covering power and intense whiteness. No undercoat is required except for iron, steel and unpainted woodwork. "Mural-tone" also provides a good ground coat for oil paints, enamels, etc., on surfaces other than rusting metals or wood.

"Mural-tone" is especially suitable for use on walls, ceilings and other interior surfaces such as fibrous plaster, ceiling, asbestos cement, cement rendering, wallpaper, "Cane-ite" and "Masonite." "Mural-tone" is also highly satisfactory for painting concrete, brick, tile, cement block and other surfaces inside public buildings, picture shows, manufacturing and industrial buildings, where surfaces must be maintained in clean, bright condition, and where proper diffusion of light is essential. The "Mural-tone" colour range includes colours which conform to the "Colour in Industry" colour range approved by the Department of Labour and National Service.

## "CALCIMO" Superior Decorative Kalsomine

(See Colour Chip Sheet)

"CALCIMO" and "MURALO" kalsomine are highest grade kalsomines, giving a superlative wall finish, truly decorative, and very economical. They cover in one coat, and are made from lime-proof and light-fast colours. "CALCIMO" and "MURALO" kalsomine are used by painter-decorators everywhere who appreciate them as the ideal decorative medium for walls and ceilings in all homes, public buildings, etc.

"CALCIMO" and "MURALO" kalsomine are made in 22 colours, white and parement white, packaged in powder form, and only requiring the addition of cold water for immediate use on any properly prepared dry, firm surface—plaster, wallboard, wood, canvas or burlap.

## "MURALO" Superior Kalsomine

(See Colour Chip Sheet)

"Cane-ite," "Masonite," asbestos, cement and wallpaper. They give a delightful velvety finish, which will not rub off, are durable and non-poisonous.

**PREPARING WALLS.**—Wash off old kalsomine, wallpaper, etc., thoroughly. Fill all cracks and holes with "Spackle," the all-purpose surfacing compound. When dry, touch up with "Muralo" Wallers, then size entire wall area and allow to dry thoroughly before applying "Calcimo" or "Muralo" kalsomine. Mix according to directions on package, with cold water. Apply freely with a good kalsomine brush, putting the same amount on all over the surface and laying it off lightly in every direction with the tip of the brush.

**QUICK DRYING.**—"Mural tone" dries to the touch in one hour and, if necessary, a second coat can be applied immediately, thereby making possible a quick, economical painting job.

Fresh, green or unseasoned plaster, concrete, etc., can be painted with "Mural-tone" straight on without any undercoating. Under favourable drying conditions, 48 hours is sufficient time for plaster—before painting. 72 hours are required before painting concrete, cement rendering, cement, etc., under normal conditions.

**WASHABILITY.**—After "Mural tone" has seasoned as recommended, it can be washed with cold water, using a mild soap with a soft cloth or sponge.

**APPLICATION—Brush and Spray.**

**Brush.**—Use a good 6 in. or 8 in. kalsomine brush for large areas; a 4 in. or 5 in. wall brush for smaller areas. Mix "Mural-tone" to proper consistency, apply freely and brush out lightly with tip of brush. For best results the air in the room should be dry with moderate temperature, free from draughts. Always wash brushes and equipment immediately after use.

**Spray.**—"Mural-tone" is ideal for spray application. Use standard sprayers. Regulate consistency to suit equipment. Always wash equipment thoroughly with cold water immediately after use.

Coverage of "Mural tone" depends on surface to which it is applied. Between 900-1200 square feet per gallon (1 coat).

**REMOVING OLD COATINGS.**—Remove old kalsomine, glue-bound water paints, glue sizes and starch size entirely by washing thoroughly with water, clean to the plaster, cement or woodwork, etc. Loose wallpaper or wallpaper printed with bleeding ink must be also removed. Disastrous results will follow the use of "Mural-tone" applied over a glue-bound product.



# MURALO COMPANY (AUSTRALIA) PTY. LTD.



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*Quality Water Paints in Paste and Powder Form*

## "MURALO"

### MILL WHITE and PASTE PAINT

#### THE SUPERIOR PASTE WATER PAINT

(See Colour Chip Sheet)

"MURALO" Mill White and Paste Paint is the highest quality paste paint for interior and exterior use, needing only the addition of cold water to make ready for use; will not scale or rub off, has excellent covering capacity, is non-poisonous and hygienic. "Muralo" Mill White and Paste Paint is easy to apply, has good durability under exposure and is noted for its whiteness and clean tone.

**DIRECTIONS FOR USE.**—Thoroughly remove all loose material, scale, dirt, limewash, etc., or the Paste Water Paint will pull these materials away from the surface. Stop all holes and cracks (exterior) with suitable stopping (interior) with "Spackle" surfacing compound. Thoroughly stir the Paste Water Paint in container before adding water.

**FOR INTERIOR USE.**—Reduce "Muralo" Paste Water Paint in the proportion of 1 gallon water to 25 lbs. of paste as an average content. Use more or less water than this according to texture of the surface and to ease brushing on very porous surfaces. Stir in water gradually.

**FOR EXTERIOR USE.**—For maximum durability it is essential to add Raw Linseed Oil. First stir the paste, then add up to 1 gallon of oil to each 28 lbs. of paste and stir in thoroughly. Then add the normal quantity of water as advised for interior use.

## "MURALO" CEMENT PAINT

For Unpainted Porous Concrete and Masonry Surfaces

### "PRESERVES and DECORATES"

(See Colour Chip Sheet)

"MURALO" Cement Paint is based on the cement principle. White Portland Cement, the principal ingredient, is the ideal basic material for a protective coating that will bond perfectly with the surface to which it is applied. The additional chemical compounds provide the necessary waterproofing and binding properties. All colours used are permanent, lime-proof, and light-proof.

**USES.**—"Muralo" Cement Paint is especially designed for painting concrete, cement stucco, brick, unglazed tile, clinker block, stone, cement mortar and other unpainted porous masonry surfaces, inside and outside all types of buildings. It is not suitable for application on wood, smooth trowelled concrete, "Masonite," stucco, gypsum plaster or on wallboards, glass or glazed tiles.

**PROPERTIES.**—"Muralo" Cement Paint penetrates the pores and forms a permanent bond with the wall, becoming an integral part of the wall. It can be used equally well on new or seasoned masonry.

Made in 10 beautiful colours and white.

## EXTERIOR "MURAL-TONE"

### "SYNTHETIC RESIN-EMULSION PAINT"

For all Masonry Surfaces and Asbestos Cement Sheetting

EXTERIOR "MURAL-TONE" "Synthetic Resin-Emulsion Paint" is supplied in concentrated paste form ready for immediate use by the addition of cold water in the proportion of 1 gallon of water to 1 gallon of Exterior "Mural-tone." It is specially formulated for all types of masonry surfaces—either green or aged—and can be also used on materials such as—

Asbestos Cement Sheetting	Green Plaster
(flat and corrugated)	Stone
Brick	Tile (unglazed)
Cement	Concrete (green or aged)
Cement Blocks	Wallboard
Plaster Blocks	Stucco
Cement Stucco	and etc

EXTERIOR "MURAL-TONE" is easy to use, needs no undercoat, can be quickly and economically applied and has exceptional coverage. It makes an excellent primer for flat or gloss oil-base paint or enamel, and can also be used over all these materials.

**NEW BUILDINGS.**—Green plaster, cement and similar surfaces that are later to be painted with oil base finishes, flat or gloss, can be decorated immediately with Exterior "Mural-tone." When seasoned, can be redecorated without further treatment with any oil-base finish.

New asbestos sheet and roofing should be left unpainted for 4 months and then one coat only is preferable for a time. Asbestos cement when weathered can be treated as other surfaces.

Exterior "Mural-tone" dries to touch in two hours and may be re-coated, if necessary, next day. It may be applied over surfaces painted with "Muralo" Cement Paint, provided the cement paint is in good condition.

## "SPACKLE"

### THE ALL-PURPOSE SURFACING COMPOUND

"SPACKLE" is the best, easiest, quickest and most economical way to use for repairing or building-up surface irregularities in plaster, wallboard, concrete, brick, tile, stone, metal castings, millwork, etc. It makes the most difficult painting job easy, saves time, and cuts costs. It is easy to mix and easy to use.

**APPLICATION.**—"Spackle" is made and packaged in dry powder form, only needing water to make ready for use. The wet or drying time is severely restricted to afford plenty of time for use after mixing.

"Spackle" may be mixed to the required consistencies for use by brush, trowel, flexible knife or any leveling tool. "Spackle" makes excellent Swedish Putty (applied atop) for smooth stirring in a little White Joint-In-Oil, Vaseline or oiler-in-oil after mixing "Spackle" in the usual way.

## MURAL-TEX

### Texture Paint for Textured and Relief Decoration

MURAL-TEX is a plastic paint for interior use, pre-mixed and in ready form for use with cold water. It is easy to use. It is applied with a suitable brush and a brush, whisk, broom, comb, sponge, wall of paper, knife or other implement. The surface is then coloured or glazed.

"MURAL-TEX" with proper undercoating, can be used on all surfaces, including smooth plaster, sand or flat finished plaster, brown-glazed, blue-glazed, white-glazed, and on wallboard, painted surfaces, brick and hollow tile, concrete, wood etc.



## BERGER'S ARCHITECTS' GUIDE

FOR PAINTING, VARNISHING, STAINING AND ENAMELLING

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IMPORTANT—Each of the Products mentioned below bears the Berger Name and Trade Mark

SURFACE	TO PAINT <small>See Product Names Below</small>	TO ENAMEL <small>See Product Names Below</small>	TO STAIN <small>See Product Names Below</small>	TO VARNISH <small>See Product Names Below</small>
BRICK WALLS (Exterior)	Prime with "Dusseal" Finish with "B.P." or Cement and Waterproof Paint	Prime with "Dusseal" Undercoat and finish with Kem Super Finish		Wentherite (Clear, waterproofing) Cannot be painted over, or 2 coats Brick Glaze
CONCRETE WALLS CEMENT SHEETS (Exterior)	Prime with "Dusseal" Finish with Cement and Waterproof Paint or "B.P."	Prime with "Dusseal" Undercoat with "B.P." Primer, Under- coat and finish with "B.P." Super Gloss or Kem Super Finish		
CEMENT SHEETS (Interior)	Prime with "Dusseal" Finish with Matone or "B.P." or Apply 2 coats Kem-Tone or Kalsomine	Prime with "Dusseal" Finish with Matone or Synthelac Satin Finish or Full Gloss or Kem Super Finish		
CEMENT FLOORS	Pave-ol Paving Paint		Lame-proof Colours mixed with Cement	
EXTERIOR WOOD SURFACES	Apply "B.P." Primer; Undercoat and finish with "B.P." or "B.P." Super Gloss	Kem Super Finish	Flat Stain and Varnish or Arboreum Wood Preservative— Brown	M.P. Copal, Fine Outside Oak, Kem Clear, or Super Synthetic Marine Varnish
EXTERIOR METAL SURFACES	Promecum Primer, followed by "B.P." Silverglo, Anti- Corrosive Paint, Ebonite, Hemacote or Roof Paint	Promecum Primer followed by "B.P." Undercoat and "B.P." Super Gloss or Kem Super Finish		
FLOORS (Interior Wood)	Pave-ol Paving Paint		Flat Stain or "Quick" Stain	"Quick" Clear or Special Floor Varnish
GALVANISED IRON SURFACES	New Iron, Prime Gal- vanised Iron Primer, Finish Roof Paint or Hemacote	Prime with Galvan- ised Iron Primer or "pickle," follow with Kem Undercoats and Kem Super Finish		
INTERIOR WALLS AND CEILINGS	Prime with "Dusseal" Finish with Matone or apply 2 coats of Kem-Tone or Kalsomine	Synthelac Full Gloss or Satin Finish or Kem Super Finish		
INTERIOR WOOD TRIM	"B.P." Primer/ Undercoat, followed by "B.P." or "B.P." Super Gloss	Kem, Synthelac Full Gloss or Satin Finish or "Quick"	Flat Stain or "Quick" Stain	Fine Inside Oak, Nevamar, Synthelac Clear or Eggshell Flat
PORCH FLOORS	Pave-ol Paving Paint		Flat Stain	Special Floor Varnish or "Quick" Clear
RADIATORS AND PIPES	Silverglo or Matone	Engine Enamel or Synthelac		Nevamar Varnish
ROOFS (Metal)	Galvanised Iron Primer on new gal- vanised iron for first coat. Roof Paint, Anti-Corrosive Paint, Silverglo or Hemacote			
ROOFS (Wood Shingle)	"B.P." Berger's Paint (Prepared)		Arboreum Wood Preservative—Brown	

SURFACE	TO PAINT <small>Use Product Named Below.</small>	TO ENAMEL <small>Use Product Named Below.</small>	TO STAIN <small>Use Product Named Below.</small>	TO VARNISH <small>Use Product Named Below.</small>
STACKS AND HOT SURFACES	Silverglo or Smoke Stack Black	Engine Enamel		
STRUCTURAL STEEL	Prime Ledquid (Liquid Red Lead) or Pronum. Finish Roof Paint, Anti-Corrosive Paint, Hennacote or Silverglo	Prime with Pronum Finish with Kern Super Finish or Synthelac Full Gloss Finish		
TO DAMP-PROOF FOUNDATIONS	Asphaltum Black or Ebonite			
TO DAMP-PROOF WALLS	Damp Resistor or "Dasscal"			
WOOD PRESERVATIVE			Arboreum Wood Preservative—Brown	Weatherboard Oil

## Post-war Paint Progress



The House of Berger has available a compact corps of field specialists — qualified paint consultants —

ready and able to advise you concerning

the many advances that are incorporated

in the Berger range of products. The ideas

germinated today in Berger Research

laboratories blossom and ripen as new and

better finishes tomorrow. These fruits

of enterprise and experience are new products planned and formulated

with rare skill and understanding of the trends in modern paint performance.

It has been characteristic of the House of Berger for more than

180 years, to anticipate and develop quality products . . . and for this reason the Berger

Brand has always been held in high esteem by tradesmen everywhere.

## Berger's Paint

“ K E E P S   O N   K E E P I N G   O N ”

# ARCHITECTS' INFORMATION SERIES ON PAINTS

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The consideration of the Specification of paintwork is constantly before Architects, Surveyors and Engineers, since almost the last link in the chain of events leading to the erection of a new building is the question of paint. To ensure satisfaction and maximum endurance, paintwork requires planning, not only in the colour sense, but in its method of application and in the suitability of primers, undercoats and finishes, to local environment and climate. It is not always fully recognized that priming coats are important and that they are the foundation of successful paintwork.

The Paint Manufacturing Industry is remarkable for its development in that it can supply suitable protective and decorative finishes for every conceivable purpose. The advance in design and architectural practice in modern times demands from the up-to-date paint maker the adaptation and improvement of products to meet new ideas, although it may be said with truth that many of the time-honoured constituents of paint remain unchanged.

This spirit of progress is maintained by Goodlass Wall through the systematic exchange of technical data respecting both raw material and finished products, between its three principal works in England and its factories in Australia, South America, India and elsewhere.

It can, therefore, be said that not only is the experience of a century's manufacturing available, but also experience in various parts of the World under differing conditions. In order to maintain high efficiency in finished goods, raw materials from all possible sources are continuously under examination in the never-ending search for still better products.

In this way Goodlass Wall have built one of the largest manufacturing organizations in the industry, and with it the reputation for service and quality. It is the company's privilege to advise users and those who specify paintwork, regarding all problems connected with paints and varnishes.



GOODLASS, WALL & CO. PTY. LTD.

*Australian Works and Offices:*

ROBEY STREET, COLLINGWOOD, VICTORIA

**ASBESTOS CEMENT—NEW**

Partly protected from weather—to be coloured.

Apply one coat of neutralizing liquid consisting of a solution of 2 lbs. Zinc Sulphate to 1 gallon of water; to be thoroughly dry and wipe off excess crystals. Follow with one or two coats of Goodlass "Frescoline" to approved shade.

**BRICKWORK**

To be waterproofed.

Two coats of Goodlass Clear "Sealapore."

To be painted.

One coat of "Sealapore"; one or two coats Goodlass Pure Paint Undercoating followed by one coat Goodlass Pure Paint Finishing to shade.

**CEMENT, STUCCO or CONCRETE**

To be waterproofed.

Two good coats of Goodlass "Sealapore" Clear.

To be coloured.

If new, one coat of neutralizing liquid as described above, followed by two coats of Goodlass "Frescoline" to approved shade. The "Frescoline" to be thinned for outside work.

**GALVANIZED IRON ROOFS**

New galvanized iron must not be painted, unless aged, without first applying one coat of a mordant solution consisting of 2 oz. of Copper Sulphate to one gallon of water. When it is dry, the excess solution should be wiped off, then follow with one coat of Goodlass "Anodite" G.5188; one coat of Goodlass Roof

Exposed—to be painted.

One coat neutralizing liquid as described above, followed by one coat of Goodlass "Sealapore" Pigmented, two coats Goodlass Pure Paint Undercoating and one coat Goodlass Pure Paint to shade.

Note.—On old work the neutralizing liquid is not required.

To be coloured.

One coat Pigmented "Sealapore," one coat Goodlass Stone Paint Primer, one coat Goodlass Imitation Stone Paint to shade, applied according to the type of finish wanted. For economy, the Stone Paint Priming may be omitted.

To be painted.

If new, one coat of neutralizing liquid, followed by one coat "Sealapore," one or two coats Goodlass Pure Paint Undercoat and one coat of Goodlass Pure Paint Finishing.

Paint; or if a reddish brown finish is required, one coat of "Anodite" G.5188 and one coat of "Anodite" G.2830

If a green finish is required, apply one coat of "Anodite" G.5188, one coat Goodlass Undercoating and one coat Goodlass Permanent Green Roof Paint.

The mordant solution is not needed on old iron.

**METAL WORK and PIPING**

To be painted.

Protect with one coat of "Anodite" G.5188 or one coat of Goodlass "Ledinol" Fluid Red Lead. Follow with one coat of Goodlass Pure Paint Undercoating and one coat of Goodlass Pure Paint Finishing to approved shade.

Aluminum Finish.

If this is required, apply over the "Anodite" prime coat one or two coats of Goodlass "Silvergleam" Aluminium Paint.

**WEATHERBOARDS—to be painted**

All knots to receive one coat of Goodlass Wood Knotting. Follow with one coat of Goodlass Pink Priming, one or two coats Goodlass Pure Paint Undercoating and finish with one coat of Goodlass Pure Paint to shade or Goodlass Permanent Green to shade or Goodlass Genuine White Lead Paint, white or tint.

For economy, one undercoat may be omitted.

**WOODWORK, SAWN or DRESSED—other than****Weatherboards—to be stained**

Two coats of Goodlass "Zucotone" Creosote Stain to shade

Complete specifications for all kinds of paintwork are contained in the Goodlass publication—"ARCHITECTS' INFORMATION SERIES ON PAINTS"—a copy of which should be in the technical library of every architect. It is a bound book of reference containing specifications and working detail. Architects and Engineers not already possessing a copy are invited to write for one to the Sales Department, Goodlass Wall & Co. Pty. Ltd., P.O. Box 16, Collingwood, Victoria.





## RUST PREVENTION

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The prevention of rust on metal work, including ornamental iron gates and fencing, steel window frames and other domestic ironwork, is best performed by using Goodglass "Anodite" primers before applying the finishing coats of paint. The ordinary routine for painting on wood will not sufficiently prevent corrosion. "Anodite" is a rust preventive compound developed in support of the electro chemical theory in respect to the rusting of iron and steel. Electrolytic rusting is set up by chemical reaction between the ordinary paint and the metal, in the presence of moisture. "Anodite" has the property of reversing the reaction cycle and thus it will prevent rust growing underneath its film. Therefore, "Anodite," used as a primer, will prevent the early breakdown of the finishing coats of paint and obviate the unsightliness caused by streaks of rust and chipped paint.

"Anodite" is made in several types to meet various conditions in which it may be used. The principal ones are:—

## SPECIFICATION FOR APPLICATION OF "ANODITE"

All the "Anodite" types are a deep reddish brown, but undercoats and finishing coats of good quality may be superimposed upon them. The "Anodite" itself can be used as a finishing coat, for both G.2830 and G.2455V are glossy in appearance. It can be applied either by brush or spray and, if necessary, can be stoved or

"Anodite" G.874—Quick drying primer, dries in 4-6 hours, intended for use only where rapid drying is essential.

"Anodite" G.5155—The standard for iron and steel priming. Dries in 6-8 hours. Has been scheduled by H.M. Office of Works as a standard first coat for iron and steel. Follow with General Purpose "Anodite" 2830 or Goodglass Pure Liquid Paint or other first quality elastic drying undercoating and finishing paint.

"Anodite" G.2830—This is the general purpose type which dries overnight. Can be applied coat over coat if desired. Finish glossy—colour reddish brown. Covering capacity, 80 sq. yards per gallon.

"Anodite" G.2455V—Gloss finishing, for use in humid or chemically charged atmospheres; suitable for factory work where rapid corrosion is caused by humid or impure atmosphere. Dries in 14 hours; works best over Primers G.5155 or G.874.

dipped. For rust prevention, wherever possible, it is best to use the brush and, where thinners are required, it is desirable to use the special type of "Anodite" thinners. (See description of the various types of "Anodite" given above.)

**GOODGLASS PURE LIQUID PAINT.** In white and colours. Undercoating and finishing. The finishing coat dries with a brilliant gloss.

**GOODGLASS "SEALAPORE" COATING.** A waterproofing and sealing liquid for preparatory use on cement and lime surfaces. The surface appearance is glazed and it will dry overnight. It covers up to 100 sq. yards per gallon, according to the porosity of the surface. Made in clear or pigmented form.

**GOODGLASS PERMANENT GREEN PAINTS.** In several shades some of which are suitable for roof work. Cover 80 sq. yards per gallon. Will keep their original shades even in tropical climates.

**GOODGLASS IMITATION STONE PAINT.** Made to imitate natural stone on stucco, brick, cement, plaster, etc. Natural rough Portland Stone finish or a cross grained finish may be obtained by brush manipulation. The finish can be stippled, and it must not be confused with water paints, i.e., mill whites or distempers. It is an oil paint containing varnish gums. Available in white, broken white, ivory, cream, black and six colours.

**GOODGLASS "COMBINOL" FLAT OIL PAINT.** A flat enamel paint, exceptionally easy to work. Made in white, cream and standard colours. "Combinol" will often give a solid finish with only two coats. Available in velvet matt finish which does not require stippling, and also in satin finish. Allow 24 hours between each coat. Will cover up to 100 sq. yards per gallon. Should be applied with ordinary flat brushes and should be flowed on freely, when it will give a perfectly flat, easily cleaned surface which will last for years. Far more satisfying than water paint or enamels.

**ACID RESISTING PAINTS.** In white, cream, grey and black. For use on work subjected to acid fumes and gases e.g., in battery rooms. Dries with a gloss in 30 minutes. Will cover 80 sq. yards per gallon.

**GOODGLASS PAVING PAINT.** For cement paths exposed to weather and surface wear. It prevents the dusting and

crumbling of cement surfaces. Finished appearance is glossy. Surface dry in 4 hours. Covering capacity, 80 sq. yards per gallon. Also suitable on brick and stone floors.

**GOODGLASS "SWANSDOWN" SUPERFINE ENAMEL.** The highest grade for both finished appearance and durability for interior and exterior. To be applied according to specification. Its use is especially recommended where great cleanliness is required, such as in hospitals, operating theatres, institutions and public buildings. Sets slowly, but dries hard in 24 hours. "Swansdown" is not difficult to apply and, on a properly prepared foundation, 4in wide flat brushes can be used for its application. It may also be sprayed.

**GLOSS "COMBINOL" HARD DRYING PAINT.** Gloss "Combinol" will last for years, giving maximum resistance to dirt and climatic change. To be applied over Gloss "Combinol" Undercoat. Dries overnight with a tough enamel like finish. To be applied with a brush. Covering capacity, 80-90 sq. yards per gallon.

**GOODGLASS "ZOCOTINE" WOOD PRESERVATIVE.** For use on sawn timbers, shingles and any wood surface not painted. "Zocotine" is a preservative stain, giving a soft coloured finish without gloss or shine. It gives protection against dry rot, fungus and insects. The covering capacity depends largely on the type of surface. The standard colours are walnut, mahogany, green and silver grey.

**GOODGLASS ALUMINIUM WOOD PRIMING.** For priming wood and to minimize the risk of blistering. A foundation coat for first-class painting. Will cover 70-80 sq. yards per gallon.

**GOODGLASS VARNISHES.** A full range of decorative varnishes is made and matured by long storage. The principal manufacturers are Goodglass Super Gloss Varnish, Goodglass Front Door Varnish, Goodglass Church Oak Varnish, Goodglass Floor Varnish (Goodglass Flat Oil Wood stain is recommended for the undercoat), Goodglass Eggshell Flat and Goodglass Gloss Varnish for all high grade interior woodwork other than floors.



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**ASBESTOS CEMENT**

To be coloured

For new work, one coat of neutralizing liquid, consisting of a solution of 2 lbs. to approved shade, followed by two coats "Frescoline" or two coats of Goodlass Calomine to shade.

**CEMENT FINISHED SURFACES**

To be coloured

For new work, one coat neutralizing liquid, followed by two coats of Goodlass Calomine to shade.

To be painted.

If new, apply the neutralizing liquid as described above, followed by one coat "Sealapore," one coat Goodlass Pure Paint Undercoating and one coat Goodlass Pure Paint Finishing

**PLASTER or FIBROUS PLASTER SHEETS**

To be coloured.

If new, one coat of neutralizing liquid is required, but it is not necessary on fibrous plaster sheets. One coat of "Sealapore," two coats of Goodlass Calomine to shade.

To be painted Flat—Old.

On old unpainted work, one coat of "Combinol" Preparatory Liquid followed by two or three coats "Combinol" Flat Oil Paint to shade.

**NEW PLASTER**—Apply one coat of neutralizing liquid, followed by one coat of "Sealapore," finishing with two or three coats of "Combinol" Flat Oil Paint to approved shade

To be painted Gloss—Old unpainted work.

One coat "Combinol" Preparatory Liquid, followed by one or two coats of Gloss "Combinol" Undercoating and one coat Gloss "Combinol" Finishing Paint to approved shade.

**NEW PLASTER**—First apply one coat of neutralizing liquid, followed when dry with one coat each of "Sealapore" and Undercoating and Finishing Gloss "Combinol."

To Enamel Old unpainted work.

One coat of "Combinol" Preparatory Liquid, three coats "Swansdown" Enamel Undercoat (one coat may be omitted where cost is a consideration); finish with one coat of "Swansdown" Superfine Enamel to approved shade.

**NEW PLASTER**—Apply the neutralizing liquid first and one coat of "Sealapore" afterwards. Follow with two or three coats of "Swansdown" Enamel Undercoating and one coat of "Swansdown" Superfine Enamel to shade.

**INTERIOR SPECIFICATIONS****INSULATION BOARDS**

To be coloured

Two coats of Goodlass Calomine to approved shade

To be painted—Oil Gloss Finish.

One coat "Combinol" Preparatory Liquid, two coats of Gloss "Combinol" Undercoating Paint, one coat of Gloss "Combinol" Finishing Paint. For economy, one undercoat may be omitted.

To be painted—Flat.

One coat of "Combinol" Preparatory Liquid; two coats Goodlass "Combinol" Flat Oil Paint to shade.

**WOODWORK**

Softwoods—To be stained and varnished.

One coat of Goodlass Flat Oil Wood Stain to shade. One coat Goodlass Hard Oak Varnish and one coat Goodlass Eggshell Flat or Eggshell Gloss. To save cost, the coat of Hard Oak Varnish may be left out.

To be painted Flat.

One coat of Goodlass Priming Paint to shade. Two coats of Goodlass "Combinol" Flat Oil Paint to shade.

To be enamelled (fast drying).

One coat of Goodlass Priming Paint to shade, one coat of "Swansdown" Enamel Undercoat, followed by one coat of "Valsepar" Quick Drying Enamel to shade.

Hardwoods—To be stained and varnished.

One coat of Goodlass Wood Filler, one coat Goodlass Flat Oil Wood Stain to shade, one coat of Goodlass Hard Oak Varnish, and finish with one coat of Goodlass Eggshell Flat or Eggshell Gloss Finishing Varnish.

**CONCRETE FLOORS or PAVING**

To be painted.

Apply on a clean, dry surface, two coats of Goodlass Paving Paint to shade.

**VERANDAH FLOORS—Jarrah**

To be preserved.

Apply two coats of special hard drying Jarrah Oil the first coat to be thinned slightly with turpentine.

**INTERNAL FLOORS—To be Stained and Varnished**

Hardwood.

One coat Goodlass Wood Filler tinted to shade. One coat Goodlass Flat Oil Wood Stain to shade. One coat Goodlass Brown French polish. One coat Goodlass Eggshell Flat Varnish and finish with a coat of Goodlass Floor Varnish. If the surfaces are not subject to heavy travel, the following can be used:—one coat Goodlass Flat Oil Wood Stain to shade and finish with one coat Goodlass Floor Varnish.

ALEXANDER, FERGUSSON PTY. LTD.

Distributors of

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"RICKSHA"



PURE PAINTS

and

## PAINT PRODUCTS

"DULUX" FINISHES

"ELEPHANT" PURE PAINTS

"MURALTONE" WALL and CEILING PAINT

"MURALO" KALSOMINE and COLD WATER PAINTS

"GOODLASS-WALL" HIGH GRADE PAINTS and PAINT PRODUCTS

"ELEPHANT" WHITELEAD

"ALPASTE" ALUMINIUM

ENGLISH and OTHER IMPORTED WALLPAPERS

YU-RITE and RENNICKS WATERPROOFING COMPOUND

"AQUASTOP" BITUMINOUS ROOFING and BUILDING BOARD



Warehouse at

304-310 LONSDALE STREET, MELBOURNE

Telephone Central 4507 (4 lines)

Telegrams: "Ritchill," Melbourne

## PAINT NEWS FOR 1947

*CA Realistic Approach—*

Because of restrictions of paint production arising out of the acute shortage of raw materials, we are limiting our specifications in this issue of Ramsay's Catalogue to those lines only, which we anticipate will be available in 1947.

Our purpose in so doing is twofold—firstly, to acquaint the architectural profession with the present and immediate future supply position; secondly, to obviate the embarrassment to members of the profession and to builders and painting contractors, as well as disappointment to clients which might arise from the specifying of products which, during the year, will either not be manufactured at all or will be only occasionally procurable in small quantities.

## PRACTICAL SERVICE TO THE BUILDING INDUSTRY

In the course of their usual service, our technical representatives will be glad to answer any queries relating to special specifications and to keep architects posted with the supply position generally.

ALEXANDER FERGUSSON PTY. LTD.

*The House of Decoration*WALLPAPERS

In the almost entire absence of Flat Wall Finishes which seems likely to continue for some time, we invite all concerned with interior decoration to inspect our large range of Post-war English and Canadian Wallpapers.

(For Specifications—See Page 3)

A.F. PAGE 2



# A.F. SPECIFICATIONS

## "RICKSHA"

### PURE PAINTS



#### A. F. SPECIFICATION No. 1

##### Painting Wood Surfaces with "RICKSHA" PURE PAINTS

#### NEW WOOD WORK

##### (a) Preparation of Surfaces.

The surfaces to be painted must be clean, free from dirt, dust and knots to receive a good finish.

##### (b) Pink Priming Coat.

Apply one coat of "Ricksha" Brand Pink Priming, thinned if necessary with genuine raw linseed oil and turpentine.

##### (c) Undercoats.

(1) Apply one coat of "Ricksha" Brand Undercoating, thinned if necessary with genuine raw linseed oil and turpentine in equal proportions. (2) Where four coats are specified, the first undercoat to be thinned with genuine raw linseed oil and turpentine in the proportion of 75% to 25%.

##### (d) Finishing Coat.

To be of "Ricksha" Brand of selected shade, applied direct from the tin without any thinning or reducing agent being added thereto.

#### OLD WOOD WORK

##### (a) Preparation of Surfaces.

The surfaces to be painted must be dry and free from dirt and dust. Where necessary, remove old paint either by scraping or burning off and dust down. On burn-off work apply one coat of "Ricksha" Pink Priming.

##### (b) Undercoats.

(1) Apply one coat of "Ricksha" Brand Undercoating, thinned if necessary with genuine raw linseed oil and turpentine in equal proportions. (2) Where four coats are specified, proceed as in (c)(1) above.

(3) Apply one coat of "Elephant" Brand Undercoat of suitable shade, thinned with one pint raw linseed oil and half a pint of genuine turpentine to each gallon of undercoat. (4) Apply one coat of "Elephant" Brand Undercoat of suitable shade, thinned with a quarter of a gallon of genuine turpentine to each gallon of undercoat.

##### (g) Finishing Coat.

To be of "Ricksha" Pure Paint of selected shade applied direct from the tin without any thinning or reducing agent being added thereto.

(a) Note.—Where the surface to be painted is in good condition, only two coats of paint may be necessary. In this case apply one coat of "Ricksha" Undercoating, thinned if necessary with genuine raw linseed oil and turpentine in equal proportions; finish with one coat of "Ricksha" Pure Paint of selected shade direct from the tin without any thinning or reducing agent being added thereto.

#### Covering Capacities

"Ricksha".—On a fair average surface, one gallon will cover approximately 100 square feet. On new or rough surfaces the area covered will be slightly less.

"Ricksha" Undercoats.—The covering capacity of these paints varies according to the nature of the surface from 600 to 700 square feet per gallon.

#### SPECIFICATIONS FOR "ELEPHANT" PURE PAINTS

As for "Ricksha" Specifications above substituting "Elephant" Pure Paints and "Elephant" Undercoating for their "Ricksha" counterparts wherever applicable.

#### A.F. SPECIFICATIONS

In addition to the traditionally famous Glasgow product, "Ricksha" is now made in Australia as well. Both products are in keeping with the high reputation associated with the "Ricksha" brand. Specification for application are identical for both products.

#### A. F. SPECIFICATION No. 2

##### Painting Iron or Metal Surfaces with "RICKSHA"

#### OLD ROOF WORK

##### (a) Preparation of Surfaces.

The surfaces to be painted must be thoroughly dry and free from all scale, rust, dirt, by brushing down with wire brushes. Where the presence of grease is suspected, wash down freely with mineral turpentine.

##### (b) Painting.

Apply one coat of "Ricksha" Red Roofing or Paleless Roof Green to be applied direct from the tin without any thinning or reducing agent being added thereto.

#### NEW ROOF WORK

(c) It is undesirable to paint new galvanised iron on account of the chemicals reaction arising from the waste acid used in the surface of the iron. Apart from this, the glazed coating of metallic zinc prevents good paint adhesion. At least twelve months should therefore elapse for the iron to "weather" before being painted. If, however, the new iron must be painted either treat with A.C.P. Lubiform or per manufacturers' directions or first wash with a solution of copper sulphate to strip the above-mentioned glaze and thus give a satisfactory "key," using 16 ozs. dissolved in a gallon of hot water. When dry, apply one coat of "Ricksha" Paint as above.

#### OTHER METAL SURFACES

##### (d) Preparation of Surfaces.

All structural steel or ironwork to be wire brushed to remove all rust and scale. All surfaces must be clean and free from oil and grease spots washed off with mineral turpentine.

##### (e) First Coat.

Apply one of the following: C.L. and R.L. Brand "Renna" Red Lead, "Champion" Red Lead Primer or Dulux Sealer Primer.

(f) Finishing Coat shall be of "Ricksha" Pure Paint of approved shade applied direct from the tin without any thinning or reducing agent being added thereto.

#### A. F. SPECIFICATION No. 3

##### Painting Exterior Concrete Surfaces with "RICKSHA"

##### (a) Preparation of Surface.

The surface to be painted must be thoroughly dry and free from all loose material dirt and grime, by brushing down with wire brushes.

##### (b) On Surfaces Not Previously Painted.

Apply one coat of "Ricksha" Cement Sealer, followed by one coat of "Ricksha" Undercoat of approved shade. Finish with one coat of "Ricksha" Paint of approved shade applied direct from the tin without any thinning or reducing agent being added thereto.

##### (c) On New Cement.

As an additional preparatory treatment to that appearing under (a) if the surface to be treated is even or almost alkaline, apply a coat of "Ricksha" T Primer thinned to correct painting consistency with from 10 to 15 per cent. of thinners No. 784 only—no other thinning agent is to be used.

##### (d) On Surfaces Which Have Been Previously Painted.

Follow the specification laid down for surfaces not previously painted, excluding the use of Cement Sealer, which is unnecessary in this instance.

# A.F. SPECIFICATIONS

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## A. F. SPECIFICATION NO. 4

Colouring Exterior Concrete Surface  
with

"MURALO" CEMENT PAINT

All surfaces to be thoroughly cleaned and repaired once then wet down with water. Apply the paint with a good quality kalsomine brush or where permissible in large work a sprayer equipped with a mechanical agitator may be used. Full and complete directions are to be found on each container.

## A. F. SPECIFICATION NO. 6

Colouring Interior Walls with

"MURALO" PASTE PAINT

ON NEW PLASTER

When applied to new plaster, the paint should be brushed off the surface before the plaster has set. The White Copper to 1 gallon hot water. When dry, the residual crystals to be brushed off.  
1st Coat: Ricksha Colours.  
2nd and 3rd Coats: Muralo Paste Paint  
1 in according to manufacturers' directions.  
Note: 24 hours to be allowed between each coat.

ON OLD PLASTER

Thoroughly remove all loose and old paint material from surfaces to be treated, then proceed as above with either one or two coats as desired omitting sealer.

## A. F. SPECIFICATION NO. 5

Colouring Interior Walls with

"MURALO" KALSOMINE

ON NEW PLASTER

If possible plaster should be allowed to age. Where age is not possible, the plaster should be brushed with the White Copper to 1 gallon hot water. When dry residual crystals to be brushed off. Then apply entire surface with Muralo Wall Size allow to dry. Then apply one or two coats as desired of Muralo Kalsomine in accordance with manufacturers' directions.

ON OLD PLASTER

Wash off old Kalsomine, etc. Repair all cracks and holes with Muralo Speckle or Muralo Patching plaster, touch up these patches with Muralo size, then, if considered necessary, size the entire surface. Then apply one or two coats as desired of Muralo Kalsomine according to manufacturers' directions.

## A. F. SPECIFICATION NO. 7

Colouring Interior Walls with

"MURALONE" WALL AND CEILING PAINT

NEW PLASTER, etc.

New Plaster, Fibro Plaster Sheets, Fibro Cement Sheets, etc., should be allowed to age if possible. Where aging is not permissible a solution of 1 lb. of White Copper to 1 gallon of hot water brushed over the entire surface of the plaster. Allow to dry. Then brush off the crystals.

If applied to extensive Ricksha Colours should be applied, allowed to dry at least 24 hours. One or two coats of Muralone as desired to be applied in accordance with manufacturers' directions; allow 24 hours between coats.

OLD SURFACES

Remove all trace of old Kalsomine with cold Water Paint-Remover Size, etc., and if considered necessary, sand with Ricksha Colours. Then proceed as above.

Caution

On no account should Muralone be applied over a glue bound product; disastrous results will follow.

## A. F. SPECIFICATION NO. 8

Application Chart for "Alpaste" Aluminium

and

"Elephant" Aluminium Mediums

Surface to be Painted.	Priming or Sealing Coat.	First Coat.	Second Coat.
(Mix 2 lbs. of "Alpaste" per gallon of Medium)		(Mix 2 lbs. of "Alpaste" per gallon of Medium)	
Structural Steel (including galvanised, etc.)	"Elephant" Remax Red Lead "Champion" or Dulux Red Lead Primer	"Elephant" Industrial Aluminium Medium.	"Elephant" Industrial Aluminium Medium.
Galvanised Iron Roofing	"Ricksha" Pink Priming	"Elephant" Ind. Medium.	"Elephant" Ind. Medium.
Wood Interior and Exterior		"Elephant" Heat Resisting Aluminium Medium.	"Elephant" Heat Resisting Aluminium Medium.
Hot Metal Surfaces—Internal		"Elephant" Industrial Aluminium Medium.	"Elephant" Industrial Aluminium Medium.
Brick Work (Aged).	Ricksha Colours.		
Plaster and Cement Surfaces (in dry condition)	Neutralise with zinc sulphate* and seal with Ricksha Colours.	"Elephant" Industrial Aluminium Medium.	"Elephant" Industrial Aluminium Medium.

NOTE.—All new galvanised iron surfaces to be pre-treated with A.C.P. Lithoform according to manufacturers' directions, or a similar treatment.

Directions for mixing "Alpaste"—For each gallon of "Elephant" Medium allow 2 lbs. of "Alpaste". Mix a small quantity of the Medium with a little water to form a thick creamy consistency, then add the remainder of the Medium. Mix only sufficient "Alpaste" required for the day's work as when freshly mixed, best results are secured.  
\*50 lbs. of zinc sulphate (white copper) should be dissolved in 1 gallon of hot water. When dry, brush off residual crystals.

A.F. PAGE 4

## Properties and Specifications of

# Spartan

## ARCHITECTURAL FINISHES

Planned as part of the Spartan service made available in all States of the Commonwealth, this brochure is confined to the modern architectural finishes in general use prior to the war. New lines contemplated as a result of war-time research are not included.

At the time of preparation of this guide the raw material situation of many lines is uncertain but limited supplies of all lines listed here should be available in all States. Up to the minute information as to the supply position of any lines can be readily obtained by contacting us at any of the addresses given.

SPARTAN PAINTS PTY. LIMITED maintain a large staff of technical experts whose knowledge of paint in relation to architectural and engineering requirements may be availed of freely.

TYPE	PRODUCT	RECOMMENDED USE
WATER PAINT Oil Bound	SPARTONA	Low cost flat finish for all types of surfaces other than metal.
FLAT WALL PAINT	SPARTAN FLAT WALL PAINT	Flat oil finish for ceilings and interior wall surfaces.
TITANIUM-ZINC PASTE WHITES	SPARTAN PAINTERS' PREPARED PASTE SPARTAN H.B. WHITE	For all classes of interior or exterior "mixed on the job" painting.
PAINT, Oil Type	SPARTAN ROOF PAINT	Roofs, steel and structural work.
	SPARTAN SUPERFINE PREPARED PAINT	For long lasting exterior work on all types of surface.
PAINT, Synthetic Type	SPARTAN SYNDURA PAINT	Exterior trim work where exceptional gloss and durability is desired.
ENAMELS HIGH GLOSS	SPARTAN QUICK DRYING ENAMEL	For interior surfaces where a durable high gloss washable finish is desired, suitable for kitchens, bathrooms, hospitals, etc.
	DECORATOR VELOX	For highest quality full gloss finishes.
ENAMEL EGGSHELL	SPARTAN SATIN FINISH ENAMEL	For interior decorative treatments calling for the highest quality of wall treatment.



**SPARTAN PAINTS PTY.  
LIMITED**

MELBOURNE : SYDNEY : ADELAIDE : PERTH  
BRISBANE : HOBART : LAUNCESTON

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## SPARTONA WATER PAINT

(Interior and Exterior Use)

ALL SURFACES EXCEPT EXTERIOR WOOD OR IRONWORK

*Specification:* Except where otherwise specified, all water paint or colouring work shall be carried out in Spartona Water Paint.

Apply 2 coats thinned, according to maker's instructions, using Spartona Petrifying Liquid for all exterior work.

## SPARTAN PAINTERS' PREPARED PASTE

(Interior and Exterior Use)

GENERAL CLAUSE COVERING "MIXED ON THE JOB" OIL PAINTS

*Specification:* Except where otherwise specified, all primers, undercoats and finishing paints shall be mixed on the job from Spartan Painters' Prepared Paste and colours in oil.

## SPARTAN FLAT WALL PAINT

(Interior Use Only)

- Specification:* A. Wooden Surfaces, Wallboards, etc.  
1 coat Spartan Flat Wall Paint thinned 1 pint raw oil per gallon of paint.  
1 coat Spartan Flat Wall Paint thinned to brushing consistency with mineral turpentine
- Specification:* B. Old Plaster, Concrete, or Brickwork.  
1 coat Spartan Wall Primer 5868.  
1 coat Spartan Flat Wall Paint thinned with raw linseed oil.  
1 coat Spartan Flat Wall Paint thinned with mineral turpentine.
- Specification:* C. New Plaster, Cement, Asbestos Sheets, etc.  
1 coat Spartan Wall Primer E.5868.  
1 coat equal parts Spartan Flat Wall Paint and Wall Primer E.5868  
2 coats Spartan Flat Wall Paint.



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SPARTAN

Technical Advice

PAINTS

104 King Street Perth  
74 Commercial Street Perth  
111 Market Street Perth

PERTH: c/o, Mowle & Stone Street

# SPECIFICATIONS

## SPARTAN ROOF PAINT

*Specification:* Properly clean down and apply 2 coats Spartan Roof Paint, thinning first coat with mineral turpentine.

**NOTE.**—New galvanized iron should receive a preliminary treatment with Spartan Galvanized Iron Cleaner to etch surface and offer a proper key.

## SPARTAN SUPERFINE PREPARED PAINT

(Interior and Exterior Use)

*Specification:* Prime all woodwork with Spartan Pink Primer 6086; plaster, cement or similar surfaces with Spartan Wall Primer 5808 (unless new, when they should receive a coat of Sparsal 41112 prior to the Wall Primer). Then apply 1 coat Spartan Groundcoat, followed by a coat of Spartan Superfine Prepared Paint.

## SPARTAN SYNDURA PAINT

(Interior and Exterior Use)

*Specification:* As for Superfine Prepared Paint, but substituting Syndura on last coat.

## SPARTAN QUICK DRYING ENAMEL

(Interior Use Only)

*Specification:* Prime according to surface as set out for Superfine Prepared Paint, then apply 1 or 2 coats Spartan Enamel Undercoat and finish with 1 coat Spartan Q.D. Enamel.

## DECORATOR VELOX

(Interior and Exterior Use)

*Specification:* Prime as above, then apply 1 or 2 coats Decorator Velox Undercoat. Finish with 1 coat Decorator Velox.

## SPARTAN "DUXBAK" WEATHERPROOFING LIQUID

(Exterior Use Only)

*Specification:* Make good all cracks, holes, etc., then apply 2 coats Spartan "DUXBAK" Weatherproofing Liquid.

Available from:

**PTY.**

**LIMITED**

MORAY

ARMADALE

LEITH

7, Market Street

10, South Street

14, Market Street

L.S. 0000: 39, Moorhead Street



27/5



# Spartan

## SUPER FLOOR GLOSS

- NON-SLIP
- SELF POLISHING
- WATER RESISTANT
- EASILY APPLIED
- TOUGH and TRAFFIC RESISTANT

## Spartan SUPER FLOOR TREATMENTS

### LINOLEUM RUBBER AND CEMENT FLOORS

Clean floor thoroughly with Spartan Super Floor Cleaner, diluting the cleaner with ten parts of water. Rinse floor with clean water.

Allow floor to thoroughly dry then apply two coats of Spartan Super Floor Gloss using lambs wool applicator or cotton string mop. For high gloss, polish with clean lambs wool pad or electric polishing machine.

### HARDWOOD FLOORS

After sanding clean floor thoroughly then apply two coats of Spartan Floor Sealer using lambs wool applicator or mop. Allow two to four hours between coatings. After second coat of Floor Sealer allow to dry overnight and then apply two coats of Spartan Super Floor Gloss.

### NORMAL COVERAGE PER GALLON

	Linoleum Sq. Feet.	Rubber Sq. Feet.	Cement Sq. Feet.	Hardwood Sq. Feet.
CLEANER	2000	2000	2000	—
SEALER	—	—	—	750
FLOOR GLOSS	2500	2500	1500	1500



## SPARTAN PAINTS PTY. LIMITED

MELBOURNE SYDNEY ADELAIDE PERTH  
BRISBANE HOBART LAUNCESTON



**GLAZEBROOKS**  
(AUSTRALIA) PTY. LTD.

THE PERMOGLAZE CO.

also at

BIRMINGHAM, LONDON & CAPE TOWN

STANDARD  
SPECIFICATIONS  
for  
GLAZEBROOKS'  
PAINTS  
ENAMELS  
and  
VARNISHES  
and  
PERMOGLAZE

- The particulars set out herein are necessarily abridged. For fuller descriptions of the various lines, special booklets, colour cards and pamphlets are available and, if not already in your files, may be obtained direct or from any of the addresses below.

VICTORIA  
GLAZEBROOKS (Aust.) PTY. LTD.  
269 Williamstown Road,  
Fishermen's Bend.  
Telephone WX 5/81 (6 lines).

NEW SOUTH WALES  
BROLITE PTY. LTD.  
Ralph & Shirley Streets, Alexandria.  
Telephone NJ 2524

SOUTH AUSTRALIA  
ATKINS LIMITED  
Pirie Street, Adelaide  
Telephone. Cent 4581

QUEENSLAND  
THOS. BROWN & SONS  
LTD.  
Eagle Street, Brisbane.  
Telephone: B 1266.

WESTERN AUSTRALIA  
ATKINS (W.A.) LTD.  
Hay Street, Perth.  
Telephone: G 2157.

# Permoglaze

A LIQUID GLAZE FOR WALLS &C.

## STANDARD GRADES

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### Primer No. 1 (Cement Primer)

A combined sealer, primer and undercoat for use on cement, plaster, brickwork, asbestos-cement and other alkaline surfaces, NEW OR OLD (when dried out). This primer possesses special alkali-resisting properties and also exceptional hiding power, enabling a solid finish to be obtained with a minimum number of coats. Supplied in White and Colours.

### Wood Primer

The most suitable primer for bare wood. Supplied in White, Grey and Pink.

### Metal Primer

A rust inhibiting coating for bare iron and steelwork to arrest and prevent corrosion. Supplied in Grey and Red.

### "Stop-Tar" Primer

For first coat on surfaces previously coated with bitumen, creosots or bleeding colours. This prevents stains bleeding through and causing discoloration. (Also effective on grease-ingrained walls and smoked ceilings). Supplied in White and Transparent.

### Undercoat No. 2

For use on surfaces that are not too absorbent, such as previously painted or primed work. Adds body and density to the finished work. Supplied in White and full range of Colours.

### Exterior Undercoat

Recommended for use in conjunction with Permoglaze Exterior Finishes. Supplied in White and full range of Colours.

### Interior Gloss Finish

Tile-like finish for interior Walls, Woodwork, Ironwork, etc. Dries overnight. Exceptionally hard-wearing and unaffected by steam. Gives a hard glazed surface that is easily washed or cleaned. Supplied in White and Colours.

### Satin Finish

A dull glazed finish for interior walls and woodwork which sets extremely hard. It has neither a "flat" nor high gloss finish, but dries overnight to a beautiful satin sheen. A new and distinctive finish of exquisite tonings—silken smooth and lasting, which provides not only more beautiful decorative effects but far greater durability. Its marble-hard, non-absorbent surface stands any amount of washing and is unaffected by steam.

### Matt Finish

For interior walls, ceilings, etc. A special synthetic velvet-like finish which can be really washed. It possesses the essential properties and unique characteristics of the Standard Permoglaze, being waterproof and setting intensely hard, but without the gloss. Superior to Flat Oil Paints in both beauty and durability.

### Exterior Gloss Finish

The most durable gloss finish for all exterior surfaces. Possesses special weather-resisting properties and retains its gloss and fresh appearance over long periods of exposure to sun and weather. This grade can also be used on interior work if desired. Supplied in White and Colours.

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# Permoglaze

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A LIQUID GLAZE FOR WALLS &c.

## GENERAL SPECIFICATIONS

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INTERIOR	EXTERIOR	TYPE of SURFACE
<p>*Specify whether Interior Gloss, Satin or Matt Finish.</p> <p>1 or 2 coats PERMOGLAZE UNDER-COAT No. 2.</p> <p>1 coat PERMOGLAZE FINISH*</p> <p>When applying white or a pale tint over a dark or patchy ground, use two coats of Undercoat.</p>	<p>1 or 2 coats PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR GLOSS FINISH.</p>	<p><b>Painted Surfaces</b></p> <p>Thoroughly clean and rub down. Where old paint is in bad condition, burn off or strip and treat as for bare surface.</p>
<p>2 coats PERMOGLAZE PRIMER No. 1 (Cement Primer)</p> <p>1 coat PERMOGLAZE FINISH*</p>	<p>1 coat PERMOGLAZE CEMENT SEALER</p> <p>1 coat PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR FINISH.</p>	<p><b>Old Walls</b> (Unpainted)</p> <p>BARE BRICK, PLASTER CEMENT, etc. [old], WALL BOARDS, LIME WASHED WALLS, DISTEMPERED WALLS.</p> <p>Remove by scraping and brushing all loose or flaking material. Prepare surface, clean and dry.</p>
<p><b>SURFACE MUST BE DRY</b></p> <p>Specify White or the</p> <p>2 coats PERMOGLAZE PRIMER No. 1 (Cement Primer).</p> <p>1 coat PERMOGLAZE FINISH*</p>	<p><b>BEFORE APPLICATION.</b></p> <p>Time resisting colours.</p> <p>1 coat PERMOGLAZE PRIMER No. 1</p> <p>1 coat PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR GLOSS FINISH.</p>	<p><b>New Walls</b></p> <p>NEW CEMENT, CONCRETE, PLASTER, BRICK and ASBESTOS CEMENT.</p> <p>(When dried out)</p> <p>Allow time necessary for wall to dry out before anything is applied.</p>
<p>1 coat PERMOGLAZE WOOD PRIMER.</p> <p>2 coats PERMOGLAZE UNDER-COAT No. 2.</p> <p>1 coat PERMOGLAZE FINISH*</p>	<p>1 coat PERMOGLAZE WOOD PRIMER.</p> <p>2 coats PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR FINISH.</p>	<p><b>Woodwork</b> (Bare)</p> <p>Prepare, clean and smooth, apply patent knotting to all gum streaks and knot holes. Fill and rub down. Then apply.</p>
<p>Treat as for "Old Walls" (unpainted)</p>	<p>Treat as for "Old Walls" (unpainted)</p>	<p><b>"Masonite" &amp; "Caneite"</b></p> <p>COMPOSITION BOARDS.</p>
<p>1 coat PERMOGLAZE METAL PRIMER.</p> <p>2 coats PERMOGLAZE UNDER-COAT No. 2.</p> <p>1 coat PERMOGLAZE FINISH*</p>	<p>1 coat PERMOGLAZE METAL PRIMER.</p> <p>2 coats PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR GLOSS FINISH.</p>	<p><b>Iron &amp; Steelwork</b></p> <p>Thoroughly clean down, removing all traces of rust and scale. NEW GALVANISED IRON should first be treated with galvanised iron primer to etch the surface.</p>
<p>1 coat PERMOGLAZE STOP-TAR PRIMER.</p> <p>2 coats PERMOGLAZE UNDER-COAT No. 2.</p> <p>1 coat PERMOGLAZE FINISH*</p>	<p>1 coat PERMOGLAZE STOP-TAR PRIMER.</p> <p>2 coats PERMOGLAZE EXTERIOR UNDERCOAT.</p> <p>1 coat PERMOGLAZE EXTERIOR GLOSS FINISH.</p>	<p>Surfaces Coated with BITUMEN, CREOSOTE (If hard and dry) and BLEEDING COLOURS.</p> <p>Also Grease Engrained Walls and Smoky Ceilings (after lining down)</p>

# Permoglaze

A LIQUID GLAZE FOR WALLS &c.

## GRADES for SPECIAL PURPOSES

### Heat Resisting Gloss Finish White

(Non Yellowing)

For interior use only. Recommended for laboratories, chemical works, etc., to resist discoloration caused by sulphur and other chemical fumes, and for finishing hot water pipes, radiators and other surfaces subject to extra heat. Keeps its colour well at temperatures up to 200 deg. F.

For colours, the ordinary grades of Permoglaze will be satisfactory.

### Silver (Metallic Finish)

A metallic finish of exceptional smoothness, high lustre and good durability. Withstands high temperatures. Can be applied direct to old painted surfaces. On bare iron and steelwork a first coat of Permoglaze Metal Primer (grey) is recommended.

### Clear Gloss Finish

A clear gloss finishing medium of great depth. Possesses remarkable durability and may be used for both interior and exterior work. Retains its gloss at least 50 per cent. longer than the best orthodox varnishes.

### Floor Dressing

For concrete, tile or composition floors. Also wood and linoleum. Gives a hard-wearing and non-slipping surface that is unaffected by soap and water.

Supplied in Light Stone, Tile Red, Chrome Green, Maroon, Cement, Middle Grey, Devon Brown and Dutch Blue.

### Swimming Pool Dressing

For coating cement surfaces that are to be continuously immersed in water. Water and chlorine resisting. Gives a bright attractive appearance and renders the surface easy to keep clean and free from slime or deposits. Use should be restricted to bare or previously Permoglazed surfaces.

Supplied in White, Cream, Crystal Green, Sky Blue, Duck Egg Tint and Black.

Prepare the surface, clean, free from dirt and slime. If necessary wash over with Commonwealth Cleanser. Allow to dry thoroughly and then apply 1 or 2 coats Permoglaze Swimming Pool Dressing. Brush well into surface and allow 2-3 days to harden before use.

### Cemuro Texture Finishes and Stone Effects

Cemuro is a special composition for coating Concrete, Plaster, Brick, Stone, etc., and is obtainable in three grades:—

STONE EFFECT, for Interior and Exterior work is weatherproof, can be scrubbed and has valuable acoustic properties. Made in 8 standard colours and white.

TEXTURE FINISH is for Interior only, and is in paste form mixed ready for use. Superior to powder and plaster texture materials.

SMOOTH FINISH is made to order only, can be used for Interior and Exterior work and is made in the same colour range as Stone Effect.

SPECIFICATIONS: Complete details on application.

### Specially Designed Coatings

Our Service Department of trained practical men and skilled laboratory staff will gladly co-operate in the design and formulation of surface coatings where problems not covered by our ordinary specifications or grades arise.

# GLAZEBROOKS' PROVED PRODUCTS



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**COLOURLESS WATERPROOFING SOLUTION FOR EXTERNAL WALLS** for Brick, Stone, Cement, Roughcast, etc. Waterproofs and preserves without altering the texture or natural appearance beyond a slight darkening of tone. Can be applied **EVEN WHILE SURFACE IS DAMP.**

## Specification.

Make good any obvious defects in mortar, then apply 2 coats BRIXOL.

**NOTE.**—The efficiency of Brixol is dependent on its being able to enter the pores of the structure to which it is applied. It is recommended only for use on bare walls.

**Brixol**  
Transparent  
Waterproofing  
Solution

**A WASHABLE FLAT OIL PAINT FOR INTERIOR USE.**

Velmura is a flat, velvet-like finish for interior walls and ceilings—something entirely new and different from ordinary flat wall finishes. Made on a special oil base, the film is hard and long wearing and washing has no harmful effect on its surface. Its attractive range of soft-toned pastel tints has been carefully selected for improving the lighting of rooms by their high light-diffusing powers.

## Specification.

**NEW WORK:** The painting of such surfaces must not be commenced until all moisture has dried out from the work. When dry, treat the surface with 1 coat of Plasseal, then 1 coat of Velmura Flat Oil Paint mixed with Plasseal as directed. Finish with 1 coat of Velmura Flat Oil Paint.

**OLD WORK:** Omit first coat of Plasseal, then as above.

**NOTE.**—The second coat of Velmura may be omitted in the case of dark colours or where the new colour approximates that of the old.

**Velmura**  
Velvet Finish  
Flat Oil Paint  
(Wet-Edge)

**O-PAK-O** is a new type, specially oil-bound water colour for interior work, supplied in a soft, creamy paste form.

## Specification.

2 coats O-PAK-O Water Paint.

An **ALKALI-RESISTING SEALER AND PRIMER** for NEW PLASTER or CEMENT, etc.

## Specification.

Allow time for surface to dry out, the apply 1 coat PLASSEAL.

Proceed with scheme of painting decided on.

**O-Pak-o**  
Oil-Bound  
Water Paint

**A UNIQUE ANTI-CORROSIVE ROOF PAINT**, for coating metal roofs, iron buildings, and all classes of structural iron and steelwork. All colours are **NON-POISONOUS** and will not contaminate tank water.

## Specification.

Thoroughly clean down, removing all traces of rust and scale. Treat New Galvanising with a coat of Galvanising Iron Primer. Then apply

1 or 2 coats "RUSTA-RESTA" Roof Paint.

**Plasseal**  
Cement & Plaster Sealer

**Rusta-Resta**  
Super Durable Roof  
and Structural Paint

**TANOX SUPER GLOSS PAINT** is guaranteed to be a pure prepared paint of the highest quality with an enamel-like finish—manufactured with a specially prepared oil medium and finest selected paint ingredients, it is **PARTICULARLY ADAPTED TO SUIT AUSTRALIAN CONDITIONS.** It is noted for the **EXCELLENT COLOUR PERMANENCE** of all its shades—has a **MOST ATTRACTIVE SUPER GLOSS** finish, which it retains long after ordinary paints have failed—is **EXTREMELY EASY WORKING**, and will not crack or blister. Based on the time-tested Titanium-Zinc combination, it is **UNAFFECTED BY SEA AIR** or extremes of climate.

## Specification.

### NEW WOODWORK:

1 Coat Tanox Priming.

1 or 2 Coats Tanox Undercoat.

1 Coat TANOX SUPER GLOSS PAINT.

### PLASTER OR CEMENT:

1 Coat Plasseal.

2 Coats Tanox Undercoat.

1 Coat TANOX SUPER GLOSS PAINT.

### OLD PAINTED WORK:

1 or 2 Coats Tanox Undercoat according to condition.

1 Coat TANOX SUPER GLOSS PAINT.

**Tanox**  
Super-Gloss  
Paint  
(Enamelized)  
Undercoat and  
Priming

## GLAZEBROOKS PTY. LTD.

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As a means of identification and for convenience, some of our labels which have been recently redesigned are reproduced on this page.



### PERMOGLAZE

A Liquid Glaze for Walls, etc.

—Tile Like, It's Easily Washed



### TANOX

The Super Gloss Enamelised Paint with  
Titanium Combination Base



### RUSTA-RESTA

The Super Durable Roof Paint



### GLAZEBROOKS

"The Sign of Quality"

GLAZEBROOKS PRODUCTS *for Beauty and Permanence*

# WARATAH

## LIMEPROOF KALSOMINE

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### DESCRIPTION

Waratah Kalsomine is a super kalsomine, manufactured from the highest quality raw materials to rigid standards by modern machinery to fulfil the demands of discriminating painters and decorators. The double milling process which Waratah Kalsomine undergoes makes its application to all wall surfaces a simple matter, giving maximum covering capacity with delightful decorative finishes.

The incorporated bonding and preserving ingredients assure a surface that will not decay—yet can be easily removed when desired. It is a sanitary non-poisonous product that is not subject to the growth of mould on decorated walls and ceilings. The use of Waratah Kalsomine is the modern method of decorating interior walls and ceilings because of its easy application, economy, pleasing finish and colour range. When applied

to flush jointed Fibrous Plaster ceilings, black sulphide staining or discoloration will not result provided Waratah is used without adulteration or addition of other products or materials.

### COVERING CAPACITY

If directions are followed, one 5 lb. packet of Waratah Kalsomine will cover 300-500 square feet of surface one coat, according to the nature of the surface being covered and the thickness of the coat being applied. Two thin coats of Waratah will give a more satisfactory job than one thick coat.

### COLOUR RANGE

Architects with experience in approving and selecting the wide range of 20 lime-proof pastel shades of Waratah do not hesitate to specify and recommend it. Painters and decorators recommend it because of its quality and spreading power under the brush. The charming shades of Waratah will satisfy all users.

### APPLICATION

Waratah Kalsomine should only be applied over clean surfaces, free from dust, or where kalsomine has been used previously. Nail holes, cracks, etc., in old work should be cut out and stopped with Victor Patching Plaster before any size or kalsomine is applied, and all rough spots removed with sandpaper. The application of a coat of Waratah Wall Size will reduce and equalise suction on hungry or patchy surfaces, providing an ideal surface for the application of Waratah Kalsomine.

The first coat of kalsomine must be dry before the next is applied. It is in the interests of the job to see that windows are closed while the kalsomine is being applied, opening when work is finished to permit even drying.



LOOK FOR THE ORANGE PACKET

AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

SYDNEY N.S.W. AUSTRALIA

# WARATAH

## MILL WHITE

Waratah Mill White is an oil-bound paste paint, suitable for application to all interior walls and ceilings. It is a milled paint not subject to mould growth or staining on Fibrous Plaster flush joints. Its colour is a pure white, giving the highest light reflecting factor possible.

When thinned with cold water to a creamy consistency, it is suitable for application to interior walls and ceilings in one or two coats. Two thin coats are recommended in preference to one thick coat. The first coat should be allowed to dry before the following one is applied.

Waratah Mill White may be applied direct to Fibrous Plaster sheets, without any undercoating or size. The application of size or sealers to any surface before coating with Waratah Mill White is only necessary to reduce suction. Waratah Mill White is ideal for coating factory ceilings lined with fibrous plaster, in addition to taking the place of limewash for application to walls and ceilings of factories, etc.

## WALL SIZE

Waratah Size is not just ground glue; it is a scientifically prepared product incorporating special ingredients to resist mould growth and neutralize hot spots, preventing them from discolouring delicate finishes. Waratah Size may be used under all kalsomines. It is particularly suitable for use before wallpaper is applied,

as it ensures a perfect job under all conditions.

No kalsomine or wallpaper should be applied until the size has dried for at least 24 hours.

Waratah Size is sold in 1 lb. packets, sufficient to mix one gallon of liquid size that will spread perfectly, forming a transparent coat that will dry quickly.

## CEMENT-COAT

### DESCRIPTION

Waratah Cement-Coat is an inorganic cement base paint for use on exterior or interior porous masonry surfaces, applied to concrete, cement or cinder concrete block, cement rendering or unglazed brickwork. Waratah Cement-Coat forms a protective impervious film that hardens like concrete, and bonds perfectly to become an inseparable part of the surface to which it is applied.

Waratah Cement-Coat brings new life and lustre to old surfaces that have not previously been oil-painted or treated with sealing or waterproofing compounds. Supplied in vapour-proof 100 lb. and 28 lb. drums as a powder ready for mixing with cold water to produce a paint that looks, acts and works very much like a good flat paint. No priming coat is required.

ensure an evenly tinted coat. Prepare only sufficient material for three or four hours work and allow to stand for 30 minutes before applying to surface.

### APPLICATION

All surfaces must be thoroughly cleaned of dust and dirt, after which all cracks, etc., should be cut out, wetted and stopped up with 2 to 1 sand cement mortar, allow stopping to set, then wet down surface ready for application of Cement-Coat; avoid overwetting of walls and apply colour to walls not in direct sunlight where possible. Second coat for best results should be applied within 48 hours of first coating, wetting down between coats being necessary only to reduce suction on extremely hot days.

Do not attempt to apply Cement-Coat on dry, hot windy days, and be sure that the surface to be coloured is uniformly damp and kept so during the entire application of Waratah Cement-Coat.

### MIXING

Waratah Cement-Coat should be mixed into a container of clean cold water in the ratio of 7 lb. of powder to three pints of water, mix to a smooth heavy paste, adding additional water to suit surface to be treated. Water/powder ratio should be maintained throughout job to

### COLOURS

A colour range of light pastel tints designed to blend in with the natural foliage, etc.

AUSTRALIAN PLASTER INDUSTRIES PTY. LTD.

**WESCO (Australia) PTY. LTD.**  
**PARRAMATTA, N.S.W.**

Affiliated with

**WESCO WATERPAINTS, Inc.**  
BERKELEY, Cal., LOS ANGELES, Cal., TRENTON, N.J.  
GOODHOPE, La., EAST BOSTON, Mass., MATTHESON, Ill.,  
MONTREAL, Que.

**Makers of**

**HIGH QUALITY**

**WATER MIXED PAINT PRODUCTS**





# WESCO

## The Perfect Water Colour

LIME PROOF

ALSO IN WHITE ★

LIGHT FAST

★ Parchment White

★ 181 Warm Ivory

140 Azure

142-B Hibiscus Pink

★ 150 Pastel Cream

182 Flinstone

148 Smoke Blue

180 Pastel Pink

123 Sunshine

101 Champagne

113-B Light Jade

161 Mushroom

100 Deep Cream

124 Ivory

104 Lettuce Green

154 Old Gold

114-A Primrose

119 Biscuit

115 Jade

121 Tan

WESCO KALSOMINE is well known as a super quality colouring medium in powder form readily soluble in water for interior use only.

### MOST SUITABLE SURFACES.

Set and sheet plaster, wall boards, sand-finished walls, lining and wall papers.

### YARDAGE.

300 to 700 square feet per mixed gallon according to surface texture and section.

### ADVANTAGES.

WESCO is easily mixed and applied, non-chalking, and is removable with water. It dries quickly without odour. All tints are lime-proof and light-fast.

### SPECIFICATIONS.

#### NEW PLASTER SHEETS AND JOINTING, SAND-FINISHED WALLS.

When dry apply one thin undercoat of DURABLE Cold Water Paint under one round coat of WESCO.

#### SET PLASTER WALLS.

When dry apply two coats of WESCO, or if suction is non, uniform first size with WESCO Wallpaper.

### WALL PAPER.

Size with one coat of WESCO Wallpaper, followed by two coats of WESCO KALSOMINE.

### OLD WORK.

Repair all breakages, cracks, etc., with SURFEX PLASTIC PATCHER. Wash off all old Kalsomine. When dry rub walls down with a cloth to remove surplus powder and pigments. Apply two coats of WESCO KALSOMINE.

### WESCO + D.D.T.

Standard WESCO scientifically impregnated with D.D.T. is made in four ceiling tints (shown at above). One coat of same will convert ceilings into insect traps and will keep rooms free from flies, mosquitoes, etc., accustomed to use such surfaces as roosts.

WESCO plus D.D.T. is harmless to humans and animals, and furnishes a decorative effect similar in every way to standard WESCO KALSOMINE.



# BONCOTE

## BONDING CEMENT PAINT

White	53 Old Ivory	77 Mushroom
Parchment W.	70 Bank Stone	65 Bungalow Green
51 Lt. Cream	88 Sandstone	80 Pewter
61 Lt. Ivory	64 Stone	85 Swim. Pool Green
67 Lt. Stone	75 Suntan	86 Cement

### BONCOTE CEMENT PAINT

BONCOTE is an artificial stone in powder form which, after mixing with cold water, may be applied by brush or spray to the undermentioned surfaces, to seal, colour and preserve in one operation.

#### MOST SUITABLE SURFACES

Absorbent cement and masonry surfaces such as new or old virgin cement rendering off the wooden floor, concrete, stucco, building tiles, "common" bricks, asbestos cement wall sheeting, bagged brickwork, cement rendered swimming pools, cellars, basements, etc., finished with wooden floor.

#### YARDAGE.

BONCOTE furnishes an average of two yards per pound two coat work, or 14 yards two coat work per mixed gallon.

#### ADVANTAGES.

BONCOTE cannot decay. Its average life two coat work is 7 years. Further coats need no surface preparation.

BONCOTE can be used under both salt and fresh water if necessary. It is a water repellent and weather-proofing medium.

#### SPECIFICATION

##### (NEW WORK).

Prepare surfaces by treating glazed and efflorescing patches as per BONCOTE manufacturers' instruction sheet. Apply two coats of BONCOTE to the following surfaces - after uniformly dampening down same and while still damp, and strictly according to the manufacturers' instruction sheet.

##### (OLD WORK, PREVIOUSLY UNPAINTED).

Prepare surfaces by removing moss and other fungi, rust and other city dirt as per BONCOTE manufacturers' instruction sheet. Apply two coats of BONCOTE to the following surfaces - after uniformly dampening down same and while still damp, and strictly according to the manufacturers' instruction sheet.



# CEMESCO

## CEMENT PAINT

**A Tough Washable Finish for Interior Surfaces only**

**27**  
**8**

2 Bone

3 Tusk

4 Warm Stone

5 Cream

9 Mushroom

10 Locust Green

11 Pearl Shade

12 Azure Blue

ALSO IN WHITE

CEMESCO is a true paint formulated on a Portland cement base which, when mixed with water, becomes a synthetic stone in liquid form.

### MOST SUITABLE SURFACES.

Internal sand-finished walls previously unpainted, unpainted interiors of cement rendering, brickwork, asbestos cement sheeting, concrete and Cassite.

### YARDAGE.

2½ yards per pound two coat work.

### ADVANTAGES.

CEMESCO is easy to mix and apply. The finish is washable and particularly tough despite its velvet-like appearance. Colours are fire-proof and light-fast.

### SPECIFICATION.

Brush off loose mortar, etc., and apply two coats of CEMESCO mixed according to manufacturers' directions direct to the surface without sealing compounds.

# DURABLO

## UNDERCOATER AND COLD WATER PAINT

White

200 Parchment

250 Ivory

266 Green Cement

201 Black

221 Lt. Stone

212 Dk. Stone

260 Sandstone

### MOST SUITABLE SURFACES.

As an undercoater for Kalsomine on fibrous plaster sheets and lime patty joints. As a priming coat for oil paint on all surfaces except metals. As a cold water paint on thoroughly clean or virgin asbestos cement, bricks, rough or brown hard-wood and Cassite.

### YARDAGE.

200 to 600 square feet per mixed gallon according to surface texture and suction.

### ADVANTAGES.

DURABLO contains a chemical to cut "moulding dopes" used in cast plaster work. It is odorless, quick drying, fire-retarding, lime-proof and light-fast.

### SPECIFICATIONS.

#### AS AN UNDERCOATER.

Apply a thin undercoat of DURABLO mixed to manufacturers' directions, to fibrous plaster sheets and joints before Kalsomining.

#### AS A PAINT.

Condition the surface equal to unpainted work. Apply two round coats of DURABLO to listed suitable surfaces.



# RESIREX

## SYNTHETIC RESIN PAINT

## WALL TINTS

ROOF COLOURS  
AND STAINERS★

Mission White

Beechwood

Surf White

Tropic Blue

Light Ivory

Suntan

Slate Grey

Copper Brown

Primrose

Light Stone

Rustic Red

Foliage Green

Beach Sand

Haze Blue

Pagoda Green

Yellow Ochre ★

Sandstone

Sea Green

Metallic Brown

Raw Umber ★

RESIREX is the pioneer synthetic resin emulsion paint of Australia, developed by intensive research during the war period, and now presented by Wesco as a time-tested and proven product.

## WHERE TO USE—

Asbestos cement (flat or corrugated). Brick (common or pressed).

Cement rendering (wood-float or steel-travelled).

Concrete or stone, iron roofs, unrosted. (decoration only).

All surfaces must be sound, free from dirt, grease and chalking or infires previous coatings.

Asbestos cement, cement rendering, concrete and brickwork should age at least six months before painting with RESIREX, with the exception of corrugated asbestos cement roofs. These can be painted immediately with RESIREX Roof Colours.

Two coats are normally required, except for corrugated asbestos roofing which requires one coat only of RESIREX Roof Colours.

## YARDAGES—

Corrugated asbestos cement (Roof Colours) 650 to 700 square feet one coat per gallon.

Flat asbestos cement (Wall Colours)—400 to 500 square feet two coats per gallon.

Sand-finish cement render—250 to 300 square feet two coats per gallon.

Common bricks—300 to 350 square feet two coats per gallon. Corrugated galvanised iron (Roof Colours)—650 square feet two coats per gallon.

## SPECIFICATIONS

New asbestos cement roofs—haze and wash down. When dry apply one round coat of RESIREX.

Asbestos cement sheeting aged 6 months or over—Apply two coats with an interval of not less than 48 hours.

Asbestos cement gutters and down pipes. Before erection, where possible, specify these to be coated internally with a bitumen paint—gutters by brushing, and pipes by swabbing.

If RESIREX roof colours to be used specify one coat.

If wall colours specify two coats.





# MAJOR BROS. & CO. PTY. LTD.

## PAINTS, ENAMELS, VARNISHES, COLOURS

Head Office and Works: CONCORD, N.S.W.

(Phone: UF.1201 (8 lines))

City Office and Showrooms: AUSTRALIA HOUSE, 38 CARRINGTON STREET, SYDNEY

Telephones: BX.1515, BX.1516

Correspondence: Box 4, P.O. Concord

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### INTERSTATE AGENTS:

#### VICTORIA:

NORMAN MACLEOD & CO. PTY. LTD.  
324 Spencer Street, Melbourne

#### QUEENSLAND

Te Mackay and West: J. D. SLOAN & CO.,  
35 Adelaide Street, Brisbane

North Queensland: BURNS, PHILP & CO. LTD.,  
Townsville, Cairns, Bowen.

#### WESTERN AUSTRALIA

MCLBOURNE STEAMSHIP CO. LTD.,  
1 Mevett Street, Fremantle.

#### SOUTH AUSTRALIA:

WILLIAM ADAMS & CO. LTD.,  
157 Waymouth Street, Adelaide

#### TASMANIA

Southern Tasmania: CHAS. DAVIS LTD.,  
64 Elizabeth Street, Hobart

Launceston: G. C. RALPH PTY. LTD.,  
154 Brisbane Street, Launceston.

North West Coast: THE RIVER DON TRADING CO. PTY.  
LTD., Devonport, Burnie and all branches.

The increasing and steady progress made by Major Bros. & Co. Pty. Ltd. during the last 30 years is due to the maintenance of the high quality of the wide range of paint products sold under their various registered trade marks.

Another contributing factor has been the confidence placed in these products by Architects, Engineers, Tradesmen, and the discerning public alike.

Major Bros. & Co. Pty. Ltd. are associated with International Paint & Compositions Co. Ltd., London, who in turn are associated with 17 factories throughout the world. Manufacture is under the direct supervision of one of the chief technical experts of the International Paint & Compositions Co. Ltd., making available through "MAJORA" products, the experience gained during 75 years of manufacture combined with a thorough knowledge of the requirements of Australian conditions.

During the years of progress, plant and buildings have been continually modernised, ensuring a means of production equal to that of any other paint manufacturer. Careful management will ensure the continuity of the dependability of all "MAJORA" products.

Apart from those listed, a range of speciality products is available for industrial purposes, details of which can be obtained from our trained technical staff.

### ARCHITECTURAL AND SPECIFICATION SERVICE

Our trained technical staff is ready at all times to assist you with advice as to the type of materials required and the necessary preparation of surface, etc. They are trained to assist when required, to give any necessary advice on the suitability of various materials, and to work harmoniously with your contractor, thus ensuring best results with our lines.

MAJOR BROS. PAINTS

"STICK TO THEIR JOBS!"

# "MAJORA" PURE MIXED PAINTS

MAJORA PURE MIXED PAINT is designed for the preservation and beautification of all types of surfaces, either exterior or interior. It is manufactured from the best raw materials obtainable.

MAJORA PURE MIXED PAINT dries with a full, lustrous finish, which is renowned for its durability and long lasting quality.

MAJORA PURE MIXED PAINT is particularly resistant to sea air and therefore is the most suitable for the preservation of all buildings, homes, etc., near and by the sea, as well as those inland.

MAJORA PURE MIXED PAINT is a multiple pigment paint, the blending and proportions of which have been accurately gauged from many years of experience in the manufacture of a high quality product.

MAJORA PURE MIXED PAINT, unlike ordinary paints, has the advantage of eventually wearing or weathering down to a smooth even surface which is ideal for repainting. Heavy cost of removal of old paint is thus avoided.



A Quality Product

MAJORA PURE MIXED PAINT will not crack, exfoliate, blister or chalk prematurely, when applied in accordance with directions.

MAJORA PURE MIXED PAINT is manufactured in a wide range of serviceable, bright, clean, durable colours, always presenting an atmosphere of cheerfulness.

MAJORA PURE MIXED PAINT does not require any special preparation, and is easily applied. It is economical in use, having excellent spreading and hiding properties.

MAJORA PURE MIXED PAINT is sold READY FOR USE, eliminating the uncertainty of results usually associated with the use of paste paint and heavy bodied paint.

# "ARTONA" FLAT OIL PAINT

FOR THE INTERIOR DECORATION OF WALLS, CEILINGS, WOODWORK, etc.

"ARTONA" is particularly easy to apply and dries with a beautiful smooth, satin finish.

"ARTONA" being non-absorbent is washable and so may be kept at its original appearance.

"ARTONA" can be applied successfully to all types of paintable surfaces, such as plaster, cement, concrete, brick, stone, wood, composition boards, metal, etc.

"ARTONA" definitely overcomes the difficulty of LAP-MARKS.

"ARTONA" flows on evenly and spreads uniformly, giving a smooth, hard-wearing surface.

"ARTONA" gives you all the advantages of an oil-base paint, combined with a rich, lasting satin sheen.

"ARTONA" is economical, due to its amazing spreading powers.

"ARTONA" is manufactured in 16 modern pastel shades which are attractive and permanent.

These shades provide the "correct" atmosphere, and will harmonise with furnishings, furniture, etc.

"ARTONA" has been used successfully in hospitals, theatres, schools, public buildings, restaurants, offices, etc., as well as homes.



## "MAJORA"

### PIGMENTED CEMENT SEALER

MAJORA PIGMENTED CEMENT SEALER is a new and efficient trouble-shooter experienced with the use of all cement, concrete, and other related, defective and surfaces either interior or exterior.

MAJORA PIGMENTED CEMENT SEALER is the best and most efficient sealer for work.

MAJORA PIGMENTED CEMENT SEALER is a trade name for a cement and plaster sealer and serves to protect subsequent coats of paint from the efflorescence in new cement. It also seals the pores and closes up uneven surfaces, ensuring a smooth and even finish.

MAJORA PIGMENTED CEMENT SEALER is the place of the usual priming coat. It is a saving and is being exceptional.

MAJORA PIGMENTED CEMENT SEALER when applied to external porous surfaces helps to prevent the ingress of moisture.

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## "MAJORA"

### CEMENT & CONCRETE PAINT

MAJORA CEMENT AND CONCRETE PAINT, as its name implies, is especially formulated for the preservation and decoration of buildings with surfaces of concrete, cement, stone, or brick.

MAJORA CEMENT AND CONCRETE PAINT will protect and arrest decay and crumbling and enhance the architectural beauty of modern concrete, or cement rendered buildings.

MAJORA CEMENT AND CONCRETE PAINT is the result of years of practical and laboratory tests and is of the highest available standard.

MAJORA CEMENT AND CONCRETE PAINT dries with a film as hard as the influence of the weather.

MAJORA CEMENT AND CONCRETE PAINT is available in a wide range of colours and is a saving and is being exceptional.

MAJORA CEMENT AND CONCRETE PAINT is a trade name for a cement and plaster sealer and serves to protect subsequent coats of paint from the efflorescence in new cement. It also seals the pores and closes up uneven surfaces, ensuring a smooth and even finish.

MAJORA CEMENT AND CONCRETE PAINT is the place of the usual priming coat. It is a saving and is being exceptional.

## "GALVO"

### THE IDEAL ROOF PAINT



GALVO is a strong anti-corrosive prepared paint for the protection and preservation of all types of metal surfaces. In addition, it is highly decorative.

GALVO is a non-poisonous roof paint—even the permanent green is non-poisonous. All colours may be applied to roofs used as a catchment area for drinking water.

GALVO has given long-lasting satisfaction and service for over 30 years under the extremes of Australian weather conditions.

GALVO has an outstanding spreading capacity, adheres firmly and has an elasticity which prevents cracking and peeling on metal surfaces subject to constant expansion and contraction.

GALVO is supplied in Red, Tile Red, Grey, French Grey, Permanent Green, Bangor Slate, White and Aluminium.

## "MAJORA" BRICK LIQUID

### FOR THE PREVENTION OF DAMP WALLS

MAJORA BRICK LIQUID is a transparent solution which presents an impervious film of non-perishing, waterproofing material.

MAJORA BRICK LIQUID is unsurpassed for preserving brick and stone exterior. It holds back fungoid growth and helps to prevent decay and crumbling.

MAJORA BRICK LIQUID forms an indestructible and insoluble barrier, preventing ingress of dampness, moisture or rain without disfiguring the surface.

MAJORA BRICK LIQUID is specially recommended for the treatment of brick walls which are not of the cavity type.

MAJORA BRICK LIQUID is partly absorbed due to its penetration, and is retained without being affected by severe atmospheric conditions.

### "ACTOL"

#### FOR SMOKE STAINS

ACTOL is an efficient isolator for priming greasy and smoke-stained interior surfaces before the application of any type of paint material. It is also a pale, efficient and rapid drier when added to linseed oil paints.

### "SILVEEN"

An outstanding aluminium paint, giving a fine silver-frosted appearance.

### "WHITEANIA"

The finest and most economical white paste paint available. Intense and opaque, it is particularly durable in areas in close proximity to the sea.

### "MAJORA" INDUSTRIAL PAINTS

Every type of special paint required in industry is available.

## "MAJORA"

### VARNISHES



**HARSH PALE EXTERIOR COPAL VARNISH** Very pale, and heavy-bodied, for exterior work. It dries hard with a brilliant lustre.

**FINE INSIDE COPAL VARNISH** Heavy-bodied, suitable for all inside work with the exception of high gloss. It has a high lustre.

**FINEST EXTRA PALE FINISHING BODY VARNISH** A pale, lustreous and durable type. Specially recommended for upholstery over pale surfaces.

**EGGSHELL FLAT VARNISH** Manufactured for indoor purposes where a high gloss is not desirable. It dries hard and gives a well-finished gloss is also available, having slightly more body.

**PALE LUSTRE COPAL VARNISH** A pale, lustreous and durable type. Specially recommended for upholstery over pale surfaces.

**LUSTROIL** A durable Varnish Oil for the preservation and beautification of all wooden surfaces such as weatherboards, etc.

### "PLYMEL"

#### ELASTIC CARBON BLACK

PLYMEL is known and used throughout the Commonwealth as a highly efficient anti-corrosive black paint, which will also resist weak acids and alkalis, and withstand extremes of heat and cold.

PLYMEL gives an air-proof and moisture-proof protective film and it is ideal for painting inside of cattle and sheep troughs.

PLYMEL is highly recommended for application to the inside of quadrant gutters, and can be applied to all paintable surfaces.

### "MAJORA" SPEED ENAMEL

A tough, durable enamel where speed in drying is the main essential.

### "MAJORA" PAVING PAINT

The ideal paint for all "walked on" surfaces. Dries with a tough, hard wearable film.

### "MAJORA"

#### FLOOR VARNISH STAIN

Manufactured to withstand constant walking on. Also ideal for furniture.



### THE FOLLOWING QUALITY PRODUCTS ARE ALSO AVAILABLE

"ARTONA" ENAMELS

"MAJORA" MASTER PAINTERS' WHITE

"MAJORA" COLOURS IN OIL

"MAJORA" COPPER PAINT

"MAJORA" YACHT ANTI-FOULING

"MAJORA" DRY COLOURS

"MAJORA" WATERPROOF OIL DRESSING

"MAJORA" GENUINE LINSEED OIL PUTTY

"MAJORA" GOLD ENAMEL

"MAJORA" MUDGUARD BLACK

"MAJORA" WEATHERPROOF DRESSING

# "MAJORA" MILL WHITE

A PRODUCT OF PROVEN EFFICIENCY

MAJORA MILL WHITE AND WATER PAINT were first introduced to Australia in 1916. Since then, these products have acquired a reputation outstanding in the field of decoration.

MAJORA MILL WHITE has remarkable hiding and spreading capacity, besides being easy to apply and cool in working.

MAJORA MILL WHITE allows all types of surfaces to be treated at the lowest possible cost.

MAJORA MILL WHITE is a decorative white paint supplied in paste form requiring only to be thinned by the addition of water.

MAJORA MILL WHITE—the original—has never been equalled



MAJORA MILL WHITE, an intense white, increases light reflection to the maximum without glare.

MAJORA MILL WHITE has stood the test of time and is recognised by all users without exception to be the most reliable white water paint finish obtainable

MAJORA MILL WHITE can be brushed or sprayed, and will not discolour, peel or rub off when applied in accordance with directions.

## CEILINITE

### THE WHITEST WHITE

CEILINITE is the perfect white paint, specially formulated for ceilings, above doors and cornices.

CEILINITE will not crack, peel or flake.

CEILINITE is manufactured in paste form, requiring only the addition of water, and is easy to apply.

CEILINITE has a soft, durable, velvety finish, which gives maximum light reflection without glare



## CEILTEX

### STEAM-RESISTING SATIN-FINISH ENAMEL

CEILTEX is a specialty paint product for the express purpose of withstanding steamy conditions or dampness due to condensation.

CEILTEX is therefore the ideal paint for application to walls and ceilings of bathrooms, kitchens, laundries, etc.

CEILTEX is supplied ready for use and dries with a durable, soft white, satin-like finish.

# "MAJORA" WATER PAINT

FOR INTERIOR AND EXTERIOR DECORATION

MAJORA WATER PAINT is scientifically prepared for application to interior or exterior surfaces such as plaster, cement, concrete, asbestos, brick, stone, composition boards, etc.

MAJORA WATER PAINT has been unanimously acclaimed by architects, builders, contractors, and other users, as being the superior water paint finish.

MAJORA WATER PAINT produces a smooth velvety finish which can be cleaned and kept at its original freshness



MAJORA WATER PAINT is manufactured in a range of attractive shades of colour, all of which have an exclusive richness of tone which gives a feeling of friendliness to interiors and enhances the natural beauty of exterior surfaces.

MAJORA WATER PAINT is supplied in paste form, requiring only the addition of water, and has a remarkable hiding and spreading capacity, combined with an unsurpassed economy.

MAJORA WATER PAINT is recognised by the trade as setting the highest standard and therefore as being the best water paint available.

## SIZOL

SIZOL is a specially formulated oil-varnish sealer for application to surfaces where excessive or uneven surface, leaving the surface cool and equally non-absorbent.

SIZOL is unsurpassed for the treatment of old surfaces where the existing materials are loose or powdery in parts and cannot be completely removed preparatory to repainting.

# ROGERS ARCHITECTS' GUIDE

## FOR PAINTING, VARNISHING, STAINING AND ENAMELLING

IMPORTANT—Each of the Products mentioned below bears the Rogers Name and Trade Mark

SURFACE	TO PAINT <small>See Product Named Below</small>	TO ENAMEL <small>See Product Named Below</small>	TO STAIN <small>See Product Named Below</small>	TO VARNISH <small>See Product Named Below</small>
BRICK WALLS (Exterior)	Prime with "Sealcote" Finish with R.M.M.P. or Concrete and Cement Paint	Prime with "Sealcote" Undercoat and finish with Kem Super Finish		Weatherite (Clear waterproofing. Can- not be painted over) or 2 coats Brick Gleaze
CONCRETE WALLS CEMENT SHEETS (Exterior)	Prime with "Sealcote" Finish with R.M.M.P. Concrete and Cement Paint	Prime with "Sealcote" Undercoat with R.M.M.P. Primer/ Undercoat and finish with R.M.M.P. Super Gloss or Kem Super Finish		
CEMENT SHEETS (Interior)	Prime with "Sealcote" Finish with Wall-Tona or R.M.M.P. or apply 2 coats Kem Tone or Decolint	Prime with "Sealcote" Finish with Wall-Tona or "Ace" Satin Finish or Full Gloss or Kem Super Finish		
CEMENT FLOORS	Pave-Of Paving Paint		Linse-proof colours mixed with cement	
EXTERIOR WOOD SURFACES	Apply R.M.M.P. Primer Undercoat and finish with R.M.M.P. or R.M.M.P. Super Gloss	Kem Super Finish	Plat Stain and Varnish or Arboream Wood Stain Brown	M.P. Copal Fine Outside Oak, Kem Clear or Super Synthetic Marine Varnish
EXTERIOR METAL SURFACES	Chromate Primer followed by R.M.M.P. Silverglo, Anti-Cor- rosive Paint, Ebonol, Ironcote or Roof Paint	Chromate Primer followed by R.M.M.P. Undercoat and Super Gloss or Kem Super Finish		
FLOORS	Pave-Of Paving Paint		Flat Stain or "Quick" Stain	"Quick" Clear or Detrol Floor Varnish
GALVANISED IRON SURFACES	New Iron, Prime Galvanised Iron Primer. Finish Roof Paint or Ironcote	Prime with Galvan- ised Iron Primer or "Pickle," follow with Kem Undercoats and Kem Super Finish		
INTERIOR WALLS AND CEILINGS	Prime with "Sealcote" Finish with Wall-Tona or apply 2 coats of Kem-Tone or Kalsomine	"Ace" Full Gloss or Satin Finish or Kem Super Finish		
INTERIOR WOOD TRIM	R.M.M.P. Primer, Undercoat followed by R.M.M.P. or R.M.M.P. Super Gloss	Kem, "Ace" Full Gloss, or Satin Finish or "Quick"	Flat Stain or "Quick" Stain	Fine Inside Oak, Detrol Waterproof, "Ace" Clear or Egg- shell Varnish
ROOFS (Metal)	Galvanised Iron Primer on new gal- vanised iron for first coat. Roof Paint, Anti-Corrosive, Silverglo or Ironcote			

# THE AUSTRALIAN PAINT & COMPOSITIONS CO. PTY. LTD.

PAINTS - ENAMELS - COLOURS - VARNISHES

AND

## SHIPS' COMPOSITIONS

IN ASSOCIATION WITH

## THE INTERNATIONAL PAINT & COMPOSITION CO. LTD.

NEWCASTLE-ON-TYNE, ENGLAND

### AGENTS:

**VICTORIA:**  
NORMAN MACLEOD & CO. PTY. LTD.,  
824 Spencer Street, Melbourne.  
**SOUTHERN QUEENSLAND (To Mackay):**  
J. D. SLOAN & CO.,  
95 Adelaide Street, Brisbane.  
**NORTH QUEENSLAND:**  
BURNS, PHILP & CO. LTD.,  
Townsville, Cairns, Bowen.  
**SOUTH AUSTRALIA:**  
WILLIAM ADAMS & CO. LTD.,  
157 Waymouth Street, Adelaide.



"INTERNATIONAL"

### AGENTS:

**WESTERN AUSTRALIA:**  
MELBOURNE STEAMSHIP CO. LTD.,  
1 Mount Street, Fremantle.

**TASMANIA:**  
Southern Tasmania: CHAS DAVIS LTD.,  
64 Elizabeth Street, Hobart.  
Launceston: B. C. RALPH PTY. LTD.,  
154 Brisbane Street, Launceston.  
North West Coast: THE RIVER DON  
TRADING CO. PTY. LTD.,  
Devonport, Burnie and all branches.

### ASSOCIATE FACTORIES:

Kobe, Bergen, Bilbao, Le Havre, Copenhagen, Montreal, Genoa, New York,  
Göteborg, Rio de Janeiro, Hamburg, Trieste, Oslo, Mexico City, Wellington, N.Z.

The Australian Paint & Compositions Co. Pty. Ltd., through its association with the International Paint and Compositions Co. Ltd., London, is kept abreast of the latest developments. New type of raw materials, latest formulae, improvements in the technique of manufacture and these are made available to our customers.

Then too, manufacture in Australia is under the supervision of one of the chief technical experts of the International Paint and Compositions Co. Ltd., thus guaranteeing the highest possible quality in our finished products.

We have been contractors to the Royal Australian Navy for underwater compositions and other lines for over 20 years. During the last war (1939-45) we supplied large quantities of underwater compositions and paints, topside, deck and

cabin paints and enamels for use on ships of the Royal Navy, United States Small Ships, Supply Ships, Tugs, ports, Hospital Ships, etc.

In addition, the Queen Mary, Queen Elizabeth and Aquitania were supplied with many tons of our products on practically every visit to Australia.

A complete range of anti-foeing, anti-corrosive compositions, paints, enamels, varnishes and colours is manufactured to suit the special requirements and needs of shipowners and owners of yachts and pleasure craft as well as special lines required for industrial, general and household purposes.

Technical advice is freely available for architects and others concerned with painting problems. You are always welcome at our City Showroom, Australia House, Carrington Street, Sydney.



Our products helped to decorate  
SHELL HOUSE

20 MILLION TONS OF SHIPPING ANNUALLY USE "INTERNATIONAL" PRODUCTS

THE AUSTRALIAN PAINT AND



COMPOSITIONS CO. PTY. LTD.

GOLD MEDAL



AWARDED  
FRANCO-BRITISH  
EXHIBITION  
1908



GOLD MEDAL



AWARDED  
BRUSSELS  
EXHIBITION  
1910

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## THE ENAMEL-LIKE PAINT

**A SUPERIOR QUALITY PAINT FOR INTERIORS AND EXTERIORS OF HOSPITALS, HOMES, BUILDINGS, SHIPS, YACHTS, FACTORIES, STEEL STRUCTURES, etc.**

LAGOLINE is recognised by Architects, Shipowners, Engineers, Tradesmen, in fact, all users, as setting the highest standard in paint finishes.

LAGOLINE is a non-poisonous, tough, durable, decorative paint, drying with an enamel finish.

LAGOLINE is acknowledged throughout the world for its excellent quality and durability.

LAGOLINE withstands salt water, sea air, and dampness. LAGOLINE spreads further than ordinary paints and is therefore more economical.

LAGOLINE gives the most efficient protection to surfaces of wood, iron, steel, cement, stone, brick, and composition boards.

LAGOLINE has the property of wearing down in such a way as to provide a smooth unbroken surface, ideally suitable for re-painting, thus avoiding costly "burning off" of old paint.

LAGOLINE requires no preparation and, through a special process invented by the manufacturers, remains unaffected by the oxygen in the air, the previous process of oxidization being perfect and final.

LAGOLINE is supplied in a wide range of attractive, clear, durable colours, which maintain the original brightness.

LAGOLINE is resistant to steamy conditions, and can be repeatedly washed.

LAGOLINE has self-levelling properties. Brush marks, common to ordinary paints, are avoided, thus increasing durability.

LAGOLINE will not flake or peel.

LAGOLINE is sold ready for use.

## "DANBOLINE"

### ANTI-CORROSIVE COMPOSITION

**A RELIABLE AND LASTING PRESERVATIVE FOR THE INTERNAL AND EXTERNAL PAINTING OF ALL IRON AND STEEL STRUCTURES.**

DANBOLINE, known and used in practically every country of the world, is manufactured in Red, Light Grey, Dark Grey, Permanent Green, Black and White.

DANBOLINE forms a smooth, uniform coating and gives the most effective protection against rust on all iron and steel surfaces.

DANBOLINE is manufactured from specially selected pigments and is subjected to a special process which gives an elasticity that prevents cracking or falling off likely to arise from the contraction, expansion, or vibration of the metal.

DANBOLINE has a spreading capacity far in excess of ordinary paints—about half as much again as that of ordinary lead and zinc paints—and lasts twice as long.

DANBOLINE is suitable for all climates, being completely unaffected by abnormal variations of weather or temperature.

DANBOLINE withstands sea air, weak sulphur or gas fumes, and other unusual conditions, and is **RESISTANT TO ALL EXTERNAL INFLUENCES**

## "LAGOMATT"

### SEMI-FLAT SATIN ENAMEL

**THE SUPREME FINISH FOR THE BEAUTIFICATION OF ALL INTERIORS**

LAGOMATT is ideal for all types of interior surfaces—plaster, composition board, cement, concrete, brick, stone, asbestos cement, and woodwork.

LAGOMATT is hygienic and non-poisonous and dries with a beautiful, soft satin surface.

LAGOMATT has almost the durability of enamel, and can be continually washed and cleaned. It is available in a range of soft pastel tints.

LAGOMATT has amazing obliterating powers, and an outstanding spreading capacity, making it an economical as standard flat oil paints.

LAGOMATT dries with a smooth, even, non-porous finish, and dirt or dust is not accumulated as with ordinary flat oil paints.

LAGOMATT has been used successfully on many large important buildings in Sydney such as Sydney Hospital, Dental Hospital, Shell House, St. Vincent's Nurses' Quarters, etc.

**20 MILLION TONS OF SHIPPING ANNUALLY USE "INTERNATIONAL" PRODUCTS**

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# "INTERNATIONAL" SPECIALTY PRODUCTS



There is a suitable type of "INTERNATIONAL" Paint, Enamel, Varnish or Composition manufactured for every requirement. Each represents the highest quality available in its particular field. All have gained enviable, world-wide reputations.

## PESCARINE

An ODOURLESS, non-poisonous, white enamel for the interior painting of ice chests, food cupboards, cold storage houses, refrigerated chambers, and all surfaces surrounding places where food is kept. Pescarine, although marketed only in gleaming White, may be supplied in a few light tints, providing a minimum quantity of 20 gallons is ordered.



## "INTERNATIONAL" VARNISHES

There is an International Varnish for every purpose—all are of the highest grade and have been proven under actual service conditions. International Super Marine Varnish, for example, is recognised as the best obtainable in its particular sphere.

Special varnishes, such as the petrol and benzol resisting types, and those required for industrial purposes, are also available.

## DANBOLINE Iron Primer

An excellent primer for direct application to all iron and steel surfaces. Danboline Iron Primer definitely prevents rust and corrosion.

### GALVEX

An anti-galvanic compound for painting the plates around bronze propellers.

## Tantectol

A quick drying enamel-like composition positively insoluble in petrol or benzol for preventing or arresting interior corrosion in all petrol, benzol and oil containers.

## "INTERNATIONAL" Four Hour Enamels

These are manufactured to combine quickness of drying with durability. The film is hard but elastic, remaining unaffected by extremes of temperatures. "International" Four Hour Enamels are unsurpassed for general use and for application to surfaces subjected to hard wear.

## Danboline Silverette

An oil varnish aluminium paint. Dries with a full, even, lustrous finish. It is very elastic and particularly tenacious.

### TECHNICAL ADVICE

Architects and others concerned with painting problems are invited to take advantage of the assistance offered by our technical experts.

You are always welcome at our City Showroom, Australia House, Carrington Street, Sydney.

## UNION JACK Copper Paint

A strong and effective anti-fouling composition for the protection of the bottoms of all wooden vessels against general marine growth and the boring worm.

### PINTOFF

Paint and Varnish Remover.

## Corroline Black

Ideal where a bituminous paint is required, this anti-corrosive paint protects steel or ironwork which is exposed to salt water, fresh water or wet conditions.

## "INTERNATIONAL" Red Lead and Graphite Primer

An ideal primer for all metal surfaces. A low gravity paint, it covers considerably more surface than red lead for a given weight and is consequently very much cheaper. Actually, "Internatlead" Red Lead and Graphite Primer covers 2 1/2 times the area p. sq. ft. with red lead of a given weight.

Because of the specially blended vehicle used in this paint it will not harden sufficiently to become brittle. Even in the severest climatic conditions it has proved itself to be remarkably efficient.

## "International" Engine Enamels

Withstand oils, petrol and heat.



## "INTERNATIONAL" SHIPS AND YACHTS COMPOSITIONS

Recognised the world over as the strongest and best anti-fouling compositions manufactured. Ingredients used in "International" Compositions are incorporated by special processes that ensure perfect results.

20 MILLION TONS OF SHIPPING ANNUALLY USE "INTERNATIONAL" PRODUCTS



## SHERWIN-WILLIAMS ARCHITECTS' GUIDE

FOR PAINTING, VARNISHING, STAINING AND ENAMELLING

IMPORTANT—Each of the Products mentioned below bears the Sherwin-Williams Name and Trade Mark

SURFACE	TO PAINT Use Product Named Below	TO ENAMEL Use Product Named Below	TO STAIN Use Product Named Below	TO VARNISH Use Product Named Below
BRICK WALLS (Exterior)	Prime with "Prym-seal." Finish with "S.W.P." or Concrete Wall Finish	Prime with "Prym-seal." Undercoat and finish with Kem Super Finish		Weatherite (Clear waterproofing. Cannot be painted over) or 2 coats Brick Glaze
CONCRETE WALLS CEMENT SHEETS (Exterior)	Prime with "Prym-seal." Finish with "S.W.P." Concrete Wall Finish	Prime with "Prym-seal." Undercoat with "S.W.P." Primer/Undercoat and finish with "S.W.P." Sheergloss or Kem Super Finish		
CEMENT SHEETS (Interior)	Prime with "Prym-seal." Finish with Flat-Tone or "S.W.P." or Apply 2 coats Kem-Tone or Deco-tint	Prime with "Prym-seal." Finish with Flat-Tone or Superlac Semi-Lustre or Full Gloss or Kem Super Finish		
CEMENT FLOORS	Pave-al Paving Paint		Lime-proof colours mixed with cement	
EXTERIOR WOOD SURFACES	Apply "S.W.P." Primer/Undercoat and finish with "S.W.P." or "S.W.P." Sheergloss	Kem Super Finish	Flat Stain and Varnish or Outside Wood Stain - Brown	M.P. Copal, Fine Outside Oak, Kem Clear, or Super Synthetic Marine Varnish
EXTERIOR METAL SURFACES	Kromik Primer, followed by "S.W.P." Silverglo, Anti-Corrosive Paint, Ebonol, Ferro Metallic or Roof Paint	Kromik Primer, followed by "S.W.P." Undercoat and Sheergloss or Kem Super Finish		
FLOORS	Pave-Oil Paving Paint		Flat Stain, or "Quick" Stain	"Quick" Clear or Marnot Varnish
GALVANISED IRON SURFACES	New Iron, Prime Galvanised Iron Primer. Finish Roof Paint or Ferro-Metallic	Prime with Galvanised Iron Primer or "Pickie," follow with Kem Undercoats and Kem Super Finish		
INTERIOR WALLS AND CEILINGS	Prime with "Prym-seal." Finish with Flat-Tone, or apply 2 coats of Kem-Tone or Kahomine	Superlac Full Gloss or Semi-Lustre or Kem Super Finish		
INTERIOR WOOD TRIM	"S.W.P." Primer/Undercoat followed by "S.W.P." or "S.W.P." Sheergloss	Kem, Superlac Full Gloss or Semi-Lustre or "Quick"	Flat Stain, or "Quick" Stain	Fine Inside Oak, Searnot, Superlac Clear or Eggshell Varnish
ROOFS (Metal)	Galvanised Iron Primer on new galvanised iron for first coat. Roof Paint, Anti-Corrosive Paint, Silverglo or Ferro-Metallic			



**HARDWARE**

SECTION

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SECTION

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CATALOGUES 1 to 6

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# CHARLES MARSHALL PTY. LTD.

Engineers, Metal Workers and Electro-platers

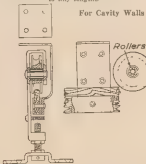
Manufacturers of Steel Windows, Fire Underwriters' Doors and Fittings, Hollow Steel Doors and Partitions, Elevator Cages and Enclosures, Roof Glazing Bars, Collapsible Gates, Ornamental Wrought Iron Work, Entrance Gates, Grilles, etc., Accordion Tracks and Hangers as used in schools and most Public Buildings, Patent Tracks and Hangers for Folding Doors, Special Tracks, Hangers, Buckets and Crates for Overhead Runners at Bakeries, Malt Houses.

42-46 BRUNSWICK STREET, FITZROY, VICTORIA

Telephone: JA 1176, JA 1177.

## Some of our most-used lines:—

Parlor Door Hangers and Tracks for Surface Sliding.  
 Patent roller hangers, on polished steel tracks, adjustable hangers, on polished steel tracks, adjustable hangers.

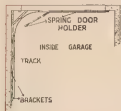


## "VILLA" GARAGE SETS.

For any number of doors.  
 Strong, Steel Roller-Bearing Hangers and Tracks.  
 Easily Fixed.

Reversible—Right or left hand.  
 (For six or more doors use two sets, opening both ways)  
 Supplied complete with all hardware, screws, etc., ready for erection.

3 Door Set, 60/-. Fittings for each extra door, 15/-.



Straight and Swivel Hangers and Tracks  
 for all Purposes

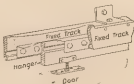
These are only some of the many Tracks and Fittings we manufacture.

## MARSHALL'S DOOR HANGERS, TRACKS AND FITTINGS

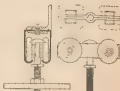
After 50 years manufacturing these goods for all sizes and weights of Doors, Gates, etc., we offer the best and cheapest available. All Tracks and Hangers are extra strong with long-life steel roller and ball bearings—machine made—from solid steel forgings—may be inspected, fitted up and running on full-size doors for every purpose, in our Showroom at the above address. If unable to call, phone, and our representative will attend to your requirements.

## "Fitzroy" Ball-Bearing Hangers and Tracks.

For any size and weight of Doors. Easily erected and adjusted, everlasting without attention. For sliding doors in cavity walls; for lift doors, straight-sliding or with positive closing attachments; for centre-closing doors; or two, three or more speed doors.



## Four-Wheel Roller-Bearing Adjustable Hanger and Steel Tracks.

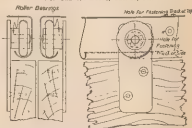


## New and Better Windows Weatherproof, Patent No. 106974/38

100% ventilation. Can be closed and glazed from the inside. Hung from the top on tracks with special roller bearing hangers. In steel or wood to any size with any number of lights. One fastener easily opens, closes and bolts a pair of windows top and bottom. Sets of fittings sold to approved window makers



## THE "BABY" SINGLE-WHEEL ROLLER-BEARING HANGERS AND TRACKS For Cabinet Doors, Sashes, etc.



# ARCHITECTURAL NOTES

## ON THE USE OF *Sashcord*

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*Prepared for the Guidance of Building Professionals*

*by*

**THE SASHCORD MANUFACTURERS OF AUSTRALIA**

In the great majority of Australian homes, old or new, sash windows are standard fittings, and Australian-made sashcord is more than ever able to render reliable and economical service. With expert workmanship, the Australian industry has manufactured cords which have lasted for generations in old homes; today manufacturers are using improved materials and better processes to ensure that new construction can depend upon efficient service from all important windows.

Cotton and Australian flax are the materials used for braided sashcords in modern homes and offices. The yarn must be of high quality, evenly spun and carefully braided, to provide a long working life under the special conditions which sashcords must withstand. The cords marketed by Australian manufacturers comprise only the best yarns, chosen for quality rather than for price. All cords are made by the solid-braided process, and are smoothly finished.

It has been found that a cord can be braided too hard for durability; on the other hand, a cord made for undue flexibility can be so soft that it will stretch and let the sash-weight hit the bottom of the box. The considerations which must govern the manufacture of a cord, then, are two: its fibres must stand constant bending, in both directions, over a pulley, and it must not lengthen by wear. Cotton and Australian flax yarns are the only materials which will meet the first condition, and careful manufacture must take up all stretch and maintain the sashweight at the correct height.

Because well-made sashcords will run freely, without jamming in the pulley or abrading in the case, their installation ensures a permanently satisfactory job. When hung in accordance with the manufacturers' specification, they are guaranteed against breakage; their efficiency is consistent under all atmospheric conditions, and architect and builder know that they will not need any "after-sales service" if all windows are hung with Australian-made braided cotton or flax cords.



### **SPECIFICATION**

"All double-hung sashes shall be hung with Braided Flax or Braided Cotton Sashcord, to be in conformity with the cord manufacturers' recommendations for size of cord pulley and weight of sashes."

(The table overleaf sets out full details.)

Please turn to page 4 of this section for the names and brands of Australian Manufacturers who will meet your requirements.

## HOW TO ORDER SASHCORD

## Sashcord Sizes:

The number of a cord is equal to the diameter in 32nds of an inch; for instance, No. 9 cord measures  $\frac{9}{32}$  in. in diameter. To ensure the correct and even wearing of sashcords it is recommended that the weight for each cord and the diameter of the pulley used be as set out in the following schedule:—

Sash Weight per Cord	Minimum Pulley Diameter	Size.			Approx. No. of Feet per lb.
		No.	Diameter	Circumference.	
	in.		in.	in.	100
Up to 5 lbs.	$1\frac{1}{2}$	5	$\frac{5}{16}$	$\frac{1}{2}$	70
Up to 6 lbs.	$1\frac{1}{2}$	6	$\frac{7}{16}$	$\frac{5}{8}$	54
6 to 12 lbs.	$1\frac{3}{4}$	7	$\frac{7}{16}$	$1\frac{1}{8}$	46
12 to 20 lbs.	2	8	$\frac{1}{2}$	$\frac{1}{2}$	38
20 to 30 lbs.	$2\frac{1}{4}$	9	$\frac{5}{8}$	$\frac{7}{8}$	30
30 to 40 lbs.	$2\frac{1}{2}$	10	$\frac{3}{4}$	1	25
40 to 45 lbs.	3	11	$\frac{11}{16}$	$1\frac{1}{8}$	20
45 to 50 lbs.	3	12	$\frac{3}{4}$	$1\frac{1}{4}$	

Packing — Braided cotton and flax sashcords are sold in coils or reels approximately 20 lbs. in weight.

## Weights of Sashes and Glass

To determine the approximate weight of glazed sashes, use the following figures:—

## Glass—

- 21 oz. glass—1.3 lbs. per sq. foot.
- 26 oz. glass 1.6 lbs. per sq. foot.
- Obscure glass—averages 1.8 lbs. per sq. foot.
- $\frac{1}{2}$  in. plate glass—3.6 lbs. per sq. foot.

## Venetian Blind Cords

The same high quality is available in cotton venetian blind cords, which are marketed in the following weights and sizes:—

## Sash Frame—

Using red pine and averaging  $2\frac{1}{2}$  in. width of material, add the height and width of each sash and multiply by—

- 1.6 for  $1\frac{1}{2}$  in. sash
- 1.8 for  $1\frac{3}{4}$  in. sash
- 2.1 for 2 in. sash

the answer is in lbs.

As these figures are approximate, it is recommended that the actual glazed sash should be weighed.

2 lbs. weight per gross yards,  $\frac{3}{4}$  in. circumference

$2\frac{1}{2}$ lbs.	..	..	..	..	$\frac{1}{2}$ in.	..
3 lbs.	..	..	..	..	$\frac{3}{4}$ in.	..
4 lbs.	..	..	..	..	1 in.	..

The Australian Cordage Industry will be glad to help you with any special problems in the use of cord and allied lines.

Please turn to page 4 of this section for the names and brands of Australian Manufacturers who will meet your requirements.

**Modern Sash Windows are attractive  
... as well as durable**



## GUARANTEE

To every architect who specifies Australian-made braided cotton or flax sashcord, a guarantee is extended against the breakage of the cord for a period of twenty years after installation. This guarantee is contingent upon the use of the proper size of cord with suitable sash weights and pulley sizes as set out in the manufacturers' table on page 2 of this catalogue.

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*Please turn to next page for the names and brands of Australian Manufacturers  
who will meet your requirements*

GUARANTEE—The Guarantee on page 3 of this Section is endorsed by the following Manufacturers. Look for their names and brands when you are buying sashcord.

<u>Manufacturers</u>	<u>Brand</u>
ADELAIDE ROPE & NAIL CO. LTD.	"WATTLE"
M. DONAGHY & SONS PTY. LTD. "	"KANGAROO"
DOWNES & SONS PTY. LTD. " "	"SECURITY"
A. FORSYTH & CO. PTY. LTD. " "	"KOOKOOBURRA"
GEO. KINNEAR & SONS PTY. LTD.	"EMU"
JAMES MILLER & CO. PTY. LTD. "	"MILLER'S"
J. SCOTT PTY. LTD. " " " "	"RENOWN"
W. A. ROPE & TWINE CO. PTY. LTD.	"SWAN"

Look for the above brands when you order sashcord and all other cordage for the building trade.









# SABCO Expansion Masonry Anchors

Frequently a contractor gets the mistaken idea that, because his material costs in anchoring by the wood plug, lead or grouted method are little or nothing, that Sabco anchoring methods are expensive. There is a natural but unfortunate reason for this mistaken idea, due to the difficulty of analysing labour costs sufficiently. When reviewing a job, total labour costs are known, and in some instances these can be more or less segregated.

But when there is an item for masonry anchorage of £5, it is apt to appear as an unwarranted expense, as wood plugs would have cost nothing. The labour saving of about £15 to £20 is lost sight of, due to inadequate labour cost analysis.

This feature of total labour and material cost of Sabco methods has been tested time and again with unvarying results.



Carries greater loads, easier to install, and more secure than most other methods. No grouting of bolts, drilling requirements cut in half, no lead or cement required, no waiting for materials to set. When properly installed, the LOXIN will develop the strength of machine bolts used.

Made of two steel halves with a taper shaped out at the base, the LOXIN employs a principle of expansion under pressure by the use of a hammer, by tightening up the bolt it drives the wedge-shaped nut up, forcing the sides of the LOXIN outward. The greater the load, the greater the expansion. It can be inserted in either a loose or tight hole. In the latter case, the shield can be tapped into place with a hammer, and under this condition it gives the best results.

To expand a LOXIN, place the fixture in position, insert a bolt into the LOXIN and tighten up.

Size,* in.	Shield Length, in.	Outside Diameter and Drill Required, in.
1	11	1
1 1/2	2	1 1/2
2	2	2
2 1/2	2 1/2	2 1/2
3	3	3
3 1/2	3 1/2	3 1/2
4	3 1/2	4
4 1/2	3 1/2	4 1/2
5	3 1/2	5

\* Bolt diameter



The TAMPIN is made of a heavy alloy steel sleeve, through which runs a tapered metal nut. The tapered nut on the 3/16 in. and 1/2 in. sizes is knurled, other sizes having two fins on the tapered nut, which prevents the nut from turning in the lead. The tapered nut is threaded for standard steel bolts and screws. The special TAMPIN alloy steel sleeve will enter all irregularities of the masonry hole and will not yield under a heavy load.

TAMPINs are unequalled for electrical and sanitary installations, and all similar

attachments to concrete, brick or stone where a shallow hole for installation is necessary and where work has to be dismantled from time to time.

Size,* in.	Min. Dimension of Hole required, in. Diam.	Depth, in.
1 1/2	1 1/2	1 1/2
2	2	2
2 1/2	2 1/2	2 1/2
3	3	3
3 1/2	3 1/2	3 1/2
4	4	4
4 1/2	4 1/2	4 1/2
5	5	5

\* Size of machine bolt or screw

† A deeper hole should be used in making attachments to soft masonry



The DRYVIN is an expansion shield you hammer home. In drilling, the hole of the fixture is used as a template, thus eliminating all spotting or use of special templates. The DRYVIN is inserted through the hole of the fixture, and then with a few blows of the hammer the nail is driven home. No laborious work with a screwdriver or wrench, no wood plugs, screws or bolts required. The nail, under the hammer blows, forces through the DRYVIN shield and comes out the back side of the masonry hole.

Size,*		Diam.	Weight in lb.
1 1/2	x	1 1/2	170
1 3/4	x	1 3/4	180
2	x	2	200
2 1/4	x	2 1/4	300
2 1/2	x	2 1/2	350
2 3/4	x	2 3/4	500
3	x	3	550
3 1/4	x	3 1/4	700
3 1/2	x	3 1/2	750
3 3/4	x	3 3/4	1,200
4	x	4	1,500

# "UNIQUE" Spiral Sash Balances for DOUBLE-HUNG Windows

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The "Unique" Sash Balances have made possible one of the most important improvements in the development of the double-hung window. They have simplified the method of balancing the sash and, in addition, simplified the construction of the window frame itself. They may be applied to old type double-hung windows for modernization, as well as to new simplified construction.



APPLY to Joinery Manufacturer, Interstate, or Dominion Distributor for Literature and Technical Data on "Unique" Spiral Sash Balances and "Narrowline" Solid Frame D.H. Windows.

- 1 Catalogue
- 2 Brochure
- 3 Price List
- 4 Data Sheet
- 5 Standard Sash Size Chart
- 6 and 7 How to Install
- 8 Trade Journal

*Unique*

Spiral Sash Balances

## All Enquiries to Distributors:

- VICTORIA—Unique Sash Balance Pty. Ltd., Kensington, Melbourne.
- NEW SOUTH WALES—Claude L. Daly & Sons Pty. Ltd., Sydney, City, Suburban and Country.
- R. G. Lane & Co. Pty. Ltd., Narrandera, Riverina.
- A. J. Edden & Co., 8 Watt St., Newcastle.
- W. R. Tresise, Kean Street, Lismore, Northern N.S.W.
- Q'LAND—James Campbell & Sons, Creek Street, Brisbane.
- TASMANIA—Crisp & Gunn Co-op., Melville Street, Hobart.
- STH. AUST.—Clarkson Ltd., Rundle Street, Adelaide.
- L. G. Abbott & Co., 260 Wakefield Street, Adelaide.
- WEST. AUST.—John Leonard, 890 Hay Street, Perth.
- N.Z.—Dominion Sales Corporation, Great South Road, Penrose, Auckland.

## Manufacturers:

UNIQUE SASH BALANCE PTY. LTD.

Registered Office

OSBORNE HOUSE, 397-399 LITTLE COLLINS STREET, MELBOURNE, C.1

Factory: Corner Smith and Barnett Streets, Kensington

Phones: MU 3815, MU 5720. Factory: FU 5718

ALSO MONTREAL, CANADA; NEW YORK, U.S.A.

BUNNINGS CATALOGUE

# WORMALD BROTHERS PTY. LTD.

FIRE PROTECTION ENGINEERS SINCE 1889

HEAD OFFICE: PARK WORKS, YOUNG STREET, WATERLOO, SYDNEY, N.S.W. MX 1071.

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## LIST OF BRANCHES

Victoria: Williamstown Road, Fishermen's Bend, Melbourne. MX 3157.

South Australia: 113 Waymouth Street, Adelaide Central 9467.

Newcastle: 21 Hunter Street, Newcastle. B 2735.

North Queensland: Pilinders Street, Townsville. 2212.

South Queensland: 132-148 Edward Street, Brisbane. B 6805.

West Australia: 48 King Street, Perth. B 6288.

Tasmania: 31 Argyle Street, Hobart 6357.

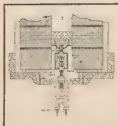
Darwin: Messrs. Fanning Brothers, Darwin.

New Zealand: Custom House Quay, Wellington. 44-783.

Christchurch. 204 Cashel Street, Christchurch. 34-502.

Auckland: Buckland House, Custom Street, Auckland. 45-405.

## BANGOR SLIDING DOOR TRACKS AND FITTINGS



PARLOUR DOOR  
Set No. 200

A set designed for the home to be used in cavity walls. Tracks can be removed without injury to the wall finish. Track is supplied in one length for Single Door and two lengths for Double Doors. Ball-bearing fibre wheel Carriages No. 50 are used.



BARN DOOR—Light Set No. 210

For doors weighing up to 100 lbs. and not exceeding 21 in. thick. Steel wheels are used and carriages have 1 1/2 in. diameter ball bearings. Sets are supplied for single and double doors.



COTTAGE DOOR SET No. 205

Used in the home for light interior doors and erected on the face of the wall and using fibre wheel ball-bearing carriages for quietness of operation.

Track can be mounted behind face board or picture rail. This set is an alternative to ParLOUR DOOR when cavity wall is unavailable.



ACCORDION DOOR. Light. Set No. 230

For Folding Partitions as used extensively in Schools, Public Buildings, Clubs and Home Dining Rooms. Doors should not exceed 5 ft 6 in. in width, and weigh not more than 85 lbs. each leaf. A half door should be used if essential for economical operation of this set. Heavy Set No. 235, identical in light set, but for doors weighing not more than 150 lbs. each leaf. Ball-bearing carriages are used for all accordion doors. When ordering give width of opening and number of doors, e.g. 5 ft 6 in. x 5 ft 6 in. x 2 for 2 doors.

ROUND THE CORNER  
Open Rail. Set 235. 3-Door.



Specially designed for private garages and to suit an opening 8 ft wide with up to a 14 ft. run from the ceiling to the floor.

Doors are 2 ft 6 in. wide x 6 ft 6 in. high and weigh up to 100 lbs. each leaf. They are made of steel and have a ball-bearing carriage.



Open Rail Set 235, 4-Door. For an opening 8 ft. wide with up to 14 ft. run. Each leaf should not exceed 60 lbs. in weight. This set provides a most convenient means of hanging Garage Doors. When ordering give number of doors and width of opening and distance from door jamb to ceiling wall.

The simplified action of Bangor Round the Corner ensures that each section of door slides easily along the ceiling wall. It is strong against the side wall of the garage.



MEDIUM OPEN RAIL—Set 275

Hangers are constructed from 2 in. x 3 in. mild steel. A cast wheel turned with taper groove and specially designed rail bearings, adjusted to give 3/4 in. a cam for raising and lowering the door. This set is suitable for doors up to 600 lbs.







# WHITCO

**CASEMENT  
HARDWARE** 28  
6

## The original cleaning hinge for Casements and Transoms

Manufactured in Australia under License from Vincent Whitney Co., San Francisco, U.S.A. Architects and Builders have readily appreciated its merits and were quick to adopt WHITCO Hardware as a fitting for all standard sash.

More than two million sets of WHITCO Hardware testify to the desirability and durability of this method of handling sash.

In the design of WHITCO it has been built up to a standard—not down to a price; economy in manufacturing has been made possible through volume.

Concealed in the head and sill.

Quickly installed



No bolts or hinges to rust and stain the frame.

No exposed hardware

WITH



The original cleaning hinge. It is easy to clean outside of any casement window.



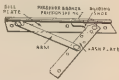
### TYPES and SIZES

WHITCO is made in Solid Brass and Steel (electro-galvanized).

WHITCO is made in the following standard sizes: 10 in., 12 in., 14 in., and 16 in. lengths.

JUMBO WHITCO is much heavier than the standard and was designed for use on large, heavy sash. It is made in 16 in., 18 in., 20 in.

WHITCO hardware is attached to the sash by means of a sash plate which extends across the joint between the stile and the rail of the sash, thus reinforcing the weakest point against sagging. All screws are set at right angles to the strain with the result that the installation is strong and dependable.



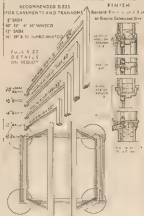
### FINISH

Standard Finish is Solid Brass or Electro Galvanized Steel

Transoms swinging either from top or bottom may be hung with WHITCO. The length of the hardware should be as long as the height of the sash will permit.

JUMBO WHITCO (for 12 in. sash) should be used on heavy and large transoms.

### WHITCO CASEMENT HARDWARE



Consult Your Nearest Reputable Hardware Merchant

WHITCO is versatile. Designed to take the place of butt hinges and stays, it can be applied to solve almost any window problem, at the same time providing the labour-saving advantages that modern industrial research has made available.

These sizes are recommended for normal casements only; where it is desired to equip a high sash, the wind resistance must be considered and a larger size used.

RANSAY'S CATALOGUE



In addition to taking the place of butt hinges and stays, this hardware makes such clever use of the principle of leverage and friction that it not only ensures a perfectly operating casement at all times, but holds the sash in any position, in any wind, without rattle. And it is never unsightly. So little of this hardware shows, even when the windows are open, that it is hardly visible. When the windows are closed, it is entirely concealed.

But best of all—especially for sun rooms and sleeping porches—the fact that WHITCO is attached to the header and the sill, instead of to upright members, means the ELIMINATION OF THE MULLIONS that otherwise would have to be provided between the sash—a saving that will pay for the hardware many times over. Any number of sash may be used in one opening. The installation is simple and the labour cost is much less. The joint between the sash may be rabbet or astragal, as desired.

## The Ideal Equipment for Sun Rooms and Sleeping Porches.

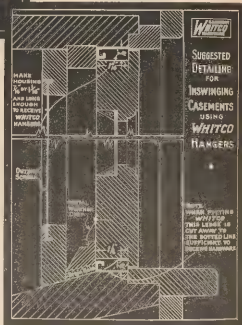
(Refer to page 3 for detail)

WHITCO Hardware solves every problem of swinging and controlling multiple casements in one opening more dependably and more economically than any other. Besides permitting the sash to be opened as much or as little as desired.



WHITCO hardware readily lends itself to any combination of casement and transom sash in the same window opening.

A considerable saving in labour cost can be effected by having all joinery rotated at the mill.



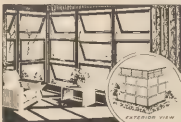
## THE UTILITY SOLUTION FOR MODERN WINDOW DESIGN

WHITCO provides the only really weather-proof controlled ventilation, offering a maximum of adjustable glass area, so that it is possible to have a cool airy verandah in summer, or a warm sunny, sitting room in winter.

Remember, that WHITCO is not only concealed when fitted, but is actually easier to fit than old-fashioned hardware.

With WHITCO you make no expenditure - over 2,000,000 sets of WHITCO the world over testify to its soundness and reliability.

Australian, Continental, and American architects and home builders



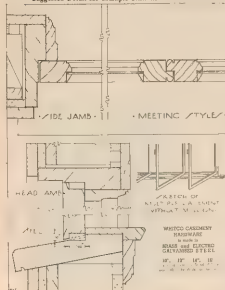
allies have been quick to appreciate its value.

WHITCO is the common-sense solution to the shortcomings of old-fashioned window fittings. Not only does it strengthen the sash, at the cost of the sash—it eliminates the rattles, provides for easy cleaning from within the home, and even makes it easier to open and close your windows; it also makes available 100 per cent. of the opening for ventilation if required, yet closes snug and tight in inclement weather. Even existing window installations can be modernized with WHITCO.

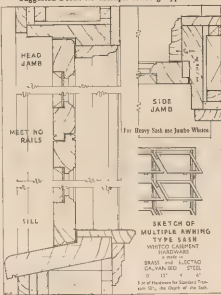
"WHITCO" Casement Hardware is international in its use. It has met with universal approval, and is used widely in countries with a wide divergence of climatic conditions, including: The United States, and Canada, most European countries, Japan in pre-war days, South America, the Philippines, South Africa, New Zealand, Australia, New Guinea, and the Islands by the Department of the Interior, the Department of the Army, the Department of the Navy, R.A.A.F., the U.S. Army, Navy and Air Force in installations such as administrative buildings, stores, aerodromes, hospitals, camps' recreation buildings and officers' clubs. Under these exacting conditions WHITCO has once again proven beyond doubt its soundness and reliability.

The simplicity and ease with which it is fitted and operated and its versatility of application commend it as a fitting for all window arrangements, for while it was originally designed to bring to casements features which would please them, it has led off all other window types, many leaders in building thought and expression who still retained their affection for double hung sashes, soon applied WHITCO to their plans, letting WHITCO modernize this type of sash as well as casements.

Suggested Detail for Multiple Sash without Mullions



Suggested Detail for Multiple Awning Type Sash

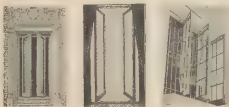
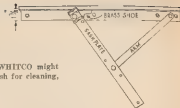


# JUMBO Heavy Duty WHITCO

## 28 Casement and Transom Hardware

6

is designed for use on extra large and heavy sash where standard WHITCO might not be adequate. WHITCO permits easy access to the outside of the sash for cleaning, for WHITCO equipped sash are semi-reversible.



### Adaptability of WHITCO

is also featured in Jumbo Hardware. Any set may be used on Casement Sash swinging to the right or to the left; or Transom Sash swinging in from the top or out from the bottom.

### Outstanding Features

#### WHITCO AWNING TYPE SASH DOUBLE HUNG STYLE

**EASY CLEANING FROM INSIDE:** Both upper and lower sash are reversible, permitting the outside of the sash to be washed from within the room.

**SIMPLICITY OF OPERATION:** JUMBO WHITCO is fitted with positive friction on allowing the sash to remain open at any angle without the aid of other mechanical devices.

**VENTILATION CONTROL:** Lower or upper sash can be opened or closed independently. Lower sash may remain locked when upper sash is open. Locking of upper sash is done by a standard fastener.

**EASY INSTALLATION:** WHITCO can be fitted to the sash by the carpenter on the job. Mill details are not complicated.

**NARROW MULLIONS:** By the elimination of weight pockets, glass area is increased without sacrificing wall space.

Individual roller shades can be attached to each sash, or Venetian blinds can shade the entire opening.

#### SPECIFICATIONS

**12 in. Sash:** All sash shall be fitted with JUMBO WHITCO. Length of the hardware should be as long as the height of the sash will permit.

**16 in. Sash:** All sash shall be fitted with STANDARD WHITCO. Length of the hardware should be as long as the height of the sash will permit.

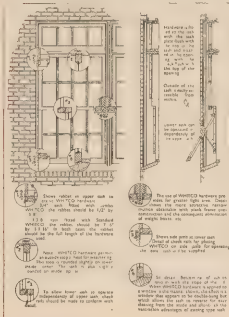
#### TYPES AND SIZES:

**12 in. Sash:** JUMBO WHITCO.

Finish: Solid Brass or Steel Electro Galvanized, manufactured in sizes 16 in., 18 in., and 20 in.

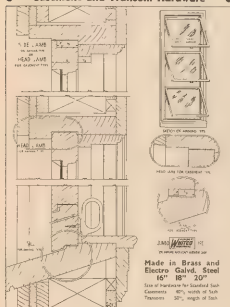
**16 in. Sash:** STANDARD WHITCO.

Finish: Solid Brass or Steel Electro Galvanized, manufactured in sizes 10 in., 12 in., 14 in., and 16 in.



Suggested Detail  
**JUMBO Heavy Duty WHITCO**

• Casement and Transom Hardware •



28  
6

It is realized that problems will arise which are outside the scope of the foregoing pages.

If any special detail or advice is required at any time, please communicate either with the agent in your State or direct with the Head Office in Brisbane when every assistance will be given.

For Your Protection the Registered



Trade Mark is Stamped on Every Piece

LOOK FOR IT

Manufactured by

**WHITCO Hardware Mfg. Co.**

Perry House, Corner Albert and Elizabeth Streets, Brisbane Phone B8602

Scottish House, 19 Bridge Street, Sydney Phone B4581

Agents:

Victoria and Tasmania: JOHNSON & GASTON PTY. LTD., 483 Elizabeth Street, Melbourne, C.I

South Australia: JOHNSON & GASTON PTY. LTD., 55 Pirie Street, Adelaide

Western Australia:—SIDNEY COOKE LTD., 370-372 Murray Street, Perth

New Zealand:—GUDGEON PTY. LTD., Auckland

South Africa:—E. F. ROWSTON, Johannesburg

BRIMLEY & CATALOGUE



**PLUMBING  
FIXTURES**

SECTION

**29**

SECTION

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CATALOGUES 1 to 5

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# SLOAN FLUSH VALVES

(Made in Australia Under License from Sloan Valve Company, U.S.A.)

29  
1



THE ROYAL FLUSH VALVE

**A. E. ATHERTON & SONS PTY. LTD.**  
381-383 LATROBE STREET, MELBOURNE, VICTORIA

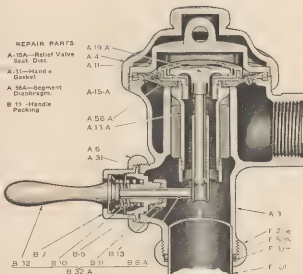
**ATHERTONS (N.S.W.) PTY. LTD.**  
COULSON STREET, ERSKINEVILLE, NEW SOUTH WALES

# SLOAN FLUSH VALVES

29

## THE ROYAL FLUSH VALVE

The improved Royal Flush Valve is the outstanding diaphragm flush valve for buildings of every type, as it includes every feature which has made Royal Valves famous for a third of a century, plus the added simplicity and wear-resisting qualities of Segment Diaphragms.



The improved Royal is operated by the slightest movement of the handle in any direction, which causes a complete flush and refill, regardless of whether the handle is held or released. It is suitable for use with any fixture.

A large, free waterway is incorporated in the design which operates efficiently at all pressures between 10 and 100 lbs. However, wall-hung and blow-out closets usually require 16-25 lbs. working pressure.

The metal segment diaphragm automatically compensates for wear due to hard use or abuse. By-pass is of monel metal and is built into the segment diaphragm, eliminating dowel pins, by-pass tube and by-pass channel in cover of valve. The Royal Valve is constructed throughout of the highest grade materials obtainable and represents the finest diaphragm flush valve on the market. More than 3 million Royal Flush Valves are in use throughout the world.

Vacuum Breakers, which provide positive prevention from back-siphonage, can be supplied at slight additional cost.

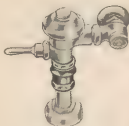
## V-100-A VACUUM BREAKER

The V-100-A Vacuum Breaker is for flush valves and is furnished as a part when so ordered.

This vacuum breaker applies two proven principles of protection from back-siphonage in one compact unit: an instantaneous check against back-flow and a large air break between flush valve and fixture.

Both of these methods have demonstrated their effectiveness over a period of years and both have been widely approved. Both of these principles are in the Sloan V-100-A for double protection.

The V-100-A is extremely sensitive to the slightest vacuum and, no matter when or in what degree a vacuum may occur, the check against back-flow acts instantly, while the 1 in. air opening maintains full atmospheric pressure at the fixture.



# THE ROYAL FLUSH VALVE

29

The V-100-A has a larger waterway than that through any flush valve; consequently no foreign matter can cause clogging or sticking. There is only one moving part and that is a monel metal pivoted swinging check.

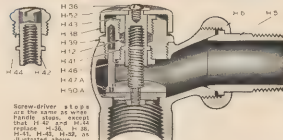
The V-100-A is open to the atmosphere at all times, except when the valve is actually flushing. Meanwhile, it is closed against back-flow, so that double protection prevents back-siphonage of polluted water.

## STOP VALVES

Stop valves should not be confused with the ordinary shut-off.

All Sloan stops have a full, free waterway, a ground joint union, a non-rising stem especially designed to stay watertight, and a moulded rubber seat that resists wear and shuts off water easily. They are furnished with wheel handle or screw-driver control, and in straight or angle pattern, as ordered. All parts of the straight and angle stops, excepting the bodies, are the same, and interchangeable.

## 1 1/2" ANGLE OR STRAIGHT STOP VALVE WITH WHEEL HANDLE



### REPAIR PARTS

H-36, H-52 Wheel Assembly

H-12—Packing

H-47A — Screw and Seat Assembly

H-50A — Moulded Rubber Seat.



PLAN



ELEVATION  
ANGLE STOP

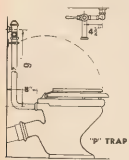


PLAN

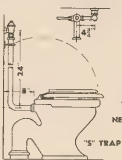


ELEVATION  
STRAIGHT STOP

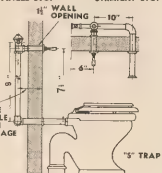
## INSTALLATION



EXPOSED INSTALLATIONS  
No. 120.



EXPOSED INSTALLATIONS  
No. 122.



CONCEALED INSTALLATION  
No. 140.

No. 120 Includes 1 1/2 inch, painted Flush Valve with wheel handle, 1 1/2 inch wheel handle angle stop, elbow union, and coupling for 1 1/2 inch water inlet.  
No. 122 Same as No. 120, except with screwdriver stop and 1 1/2 inch union.  
No. 140 1 1/2 inch, painted angle or straight Flush Valve with 1 1/2 inch wheel handle or screwdriver stop, 1 1/2 inch elbow union, 1 1/2 inch water inlet, and 1 1/2 inch water outlet. Suitable for 1 1/2, 1 1/4, 1 1/8, 3/4, 1/2, 1/4, 1/8. Exposed parts chrome plated.

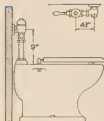
Orders or specifications for Nos. 110, 120 and 122 should state:  
(1) Volume of flush in gallons  
(2) Installation number.  
(3) List any variations, if any, viz. —  
P — Painted only.  
H — With handle in handle.  
Y — With 1 1/2 inch water inlet.  
Y — With 3/4 inch water inlet.

# SLOAN FLUSH VALVES

29

## THE ROYAL FLUSH VALVE

### INSTALLATION

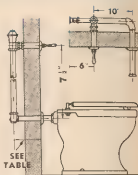


No. 110

THROUGH FLOOR  
DISCHARGE

Thickness of Wall	Distance from Finished Wall to Centre of Valve
0 to 1"	38"
1" to 2"	41"
2" to 3"	51"
3" to 4"	61"
4" to 5"	71"
5" to 6"	81"
6" to 7"	91"
7" to 8"	101"
8" to 9"	111"

NOTE—Orders for Concealed Flush Valves must state thickness of wall.



SEE TABLE

No. 110

CONCEALED  
INSTALLATION

### SYPHONIC CLOSETS

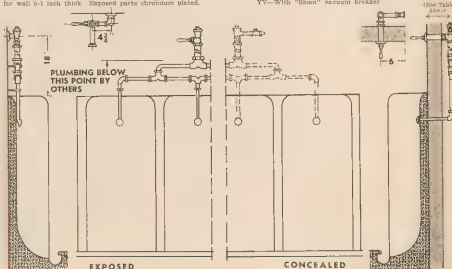
This system is not in general use in Australia, where at present most installations are of the Wash-Down Type. Syphonic pans must be imported from overseas.

No. 110—Includes chromium plated Flush Valve with white metal oscillating handle, 1-inch wheel handle angle stop, elbow flush connection coupling for 1½-inch water inlet.

No. 110—Includes concealed rough brass flush valve with 1-inch wheel handle straight stop, elbow flush connection for 1½-inch water inlet and white metal oscillating handle. Suitable for wall 6-1 inch thick. Exposed parts chromium plated.

NOTE—Orders must state thickness of wall; extensions are made in 1½-inch walls. Orders or specifications should state letters of rating variations, if any are.

A—With inlet on right hand side  
B—With inlet on back of flush valve  
D—With 1-inch wheel angle stop  
YV—With "Sloan" vacuum breaker



EXPOSED

CONCEALED

URINAL STALLS



"LYND" EARTHENWARE  
PEDESTAL BASIN.

has sheer vertical face at back of bowl, and under the pillar cocks. Generous shelf area is also provided between cocks.



"KILLARA" EARTHENWARE  
VALVE TOILET SUITE.

It features wash-down pan with vertical non-sealing back. Available with "S" or "P" trap; right or left hand vent.

Write for Service Sheets of above units.

#### PRODUCTS OF THE FOWLER POTTERIES.

##### SANITARY, BATHROOM and KITCHEN EARTHENWARE

Toilet Combination Suites, Toilet Pans,  
Bathroom Wall Fittings, Lavatory Basins,  
Kitchen Sinks, Cleaners' Sinks and Slop  
Hoppers for Hospitals and Public Buildings,  
Laboratory Earthenware.

##### HOSPITAL AND GENERAL ENAMELLED FIRECLAY WARE

De-frost and Edinburgh Sinks, 10 48in.  
Lavatory Basins,  
Linen Shells and Toilet Pans,  
Bed Pan Washers,  
Slop Sinks.

##### FLOOR TILES

Tessellated, Granite, and Moroccan Tiles  
in a wide range of shades and patterns.

##### WALL TILES

White, Black, Coloured, Oatmeal and  
Marbled glazed Tiles with range of fit-  
tings and coloured Edge pieces.

##### TERRA-COTTA WARE

Flower Pots, Air Bricks,  
Agricultural Pipes,  
Chimney Pots, etc.

##### SALT GLAZED STONEWARE

Chemical Containers and Fittings,  
Drain and Sewer Pipes and Fittings,  
Chimney Pots, etc.

##### INSULATORS

Various unglazed and glazed insulators  
to any design or requirement.

##### HOUSEHOLD CROCKERY

White and Coloured Pudding Basins,  
Bowls, Teapots, Coffee Pots, Jugs and a  
full range of kitchenware.

##### BRISTOLWARE

Bread Cracks, Stone Jars, Spirit and Wine  
Jars, Wickered Jars, Ink Bottles, Ginger  
beer Bottles, Jugs and general household  
Bristolware.

##### CHEMICAL WARE

Acid-resisting Glazed Pipes and Fittings,  
Acid Receivers, 2 gals. to 100 gals.  
capacity.  
Acid Jars, 1 pt. to 5 gals.  
Earthenware Chemical Containers and  
fittings to any design required.

## R. FOWLER LIMITED

ESTABLISHED IN AUSTRALIA FOR OVER A CENTURY.

Showrooms and Potteries:-

FITZROY STREET, MARRICKVILLE, N.S.W.

THOMASTOWN, VICTORIA

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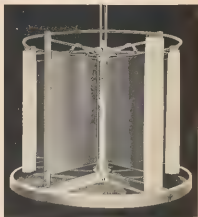
M. SMITH PTY. LTD.  
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MADDEN & JOHNSON,  
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BURFITT, SELTH & CO. LTD.,  
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HANDBOOK CATALOGUE

**BRADLEY**

*Approved by Department of Labour and Industry and State Water Boards for  
Factories, Schools, Hospitals, etc.*



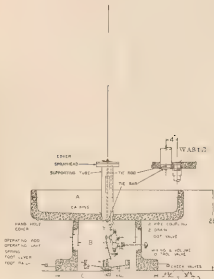
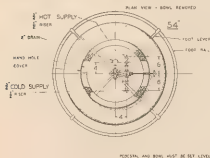
For  
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Schools  
Hospitals  
and  
Industrial  
Institutions

**BRADLEY**  
**WASHFOUNTAINS** 29  
and 3

## MULTI-STALL SHOWERS

174-176 GEORGE STREET, SYDNEY  
NEW SOUTH WALES

Telephone BW 6017, B1771



Size	A	B	C
54 in.	54 in.	20 in.	36 in.

**MATERIAL:**

Bowls and Pedestals: Heavily reinforced precast materials. MARMORITE and BRADONITE

**MARMORITE.** Ground and Polished Black and White, Grey, Cream, Red.

**BRADONITE.** Plain Colours, Grey, Red, Black and Cream. Complete with

**FITTINGS:** Non-ferrous metal. Foot Valve, Mixing Valve, Volume Control Valve. Foot Levers, Foot Rail, Foot-operating Unit, Supply Pipe, Sprayhead, etc.

**CONTRACTOR** supplies Water Piping, Waste Pipe, Trap, Venting (if required), Check Valves to Hot and Cold Supply Lines. High Pressure Stop-cock on Cold Supply.

PIPE MEASUREMENTS:

Water Supply (H. & C.),  $\frac{3}{4}$  in.  
Waste, 2 in.

FLOOR LOADINGS:

59.4 lbs. per sq. ft.

**WATER PRESSURE:**

Minimum of 14 lbs. per sq. in., in either supply.

**ACCOMMODATION:** 8-10 users simultaneously. Minimum Specification (Dept. of Labour and Industry, Factory Welfare Board, N.S.W.): 1 Washfountain—100 users.

MINIMUM PRACTICAL CLEARANCES:

24 in. from wall; 54 in. between units.  
Bowls are treated with Vinylyte solution,  
making surfaces impervious to alkali and  
acid actions.

RESEARCH &amp; CATALOGUE

# "TOILEX"

DEODORANT AND INTERFOLD TOILET PAPER CONTAINER

DOMINANT CHEMICAL CO.

421-25 COVENTRY STREET, SOUTH MELBOURNE

Phone. Mx 5745 (3 lines)

## DESCRIPTION

The "Toilex" has been designed to meet the demand for a complete single unit fixture combining the features of a deodorant container and toilet paper holder and distributor. It is convenient, sanitary, economical, strong in construction, and especially recommended for use in hotels, office buildings, institutions and public lavatories. The toilet paper and deodorant tablets—features of which are later described—are also supplied by the Dominant Chemical Co., from whom refills are obtained.

The Container consists of two main parts: (1) an aluminium-finished, sheet steel body, incorporating a perforated deodorant container, and a one-sheet delivery, interfold toilet paper holder and distributor; and (2) a chromium-plated brass "fall forward" cover, slotted to allow the deodorizing by the tablets and to permit a view of the toilet paper refill indicator. The container is easily refilled when wholly or partly empty, as the entire cover falls forward when unlocked, leaving the deodorant tablets and paper that remain safely supported in the body of the cabinet. The cover has rounded corners and edges, and is fitted with a simple strong lock that keeps the contents under lock and key.

Paper capacity is 750 (1½ packets) of 5½ in. x 5½ in. sheets.

The Toilet Paper is especially manufactured for use in the "Toilex." It is perfectly sanitary, strong in texture, with one side velvet finished, and as it is completely soluble, it is entirely suitable for septic tank installations. The sheets are interfolded so that the withdrawal of one sheet automatically brings down the next into position for use. The one-sheet delivery with a slight resistance to withdrawal discourages wasteful use and conduces to economy. "Toilex" sheets are in compact 500-sheet packages.

The Deodorant Tablets give off a pleasant odour, sufficiently strong to short unpleasant smells. They are available in 300 and 500. For extreme conditions, a disinfectant or germicide can be supplied.



THE "TOILEX"  
Deodorant and Interfold Toilet Paper Container.

## INSTALLATION

Every "Toilex" container is supplied with three ½ in. No. 8 wood screws ready for mounting. Centres for fixing are shown in the drawing; these measurements may be used for plugging walls (or for drilling for expansion devices) in advance of the delivery of the container.

## PROVEN SERVICE

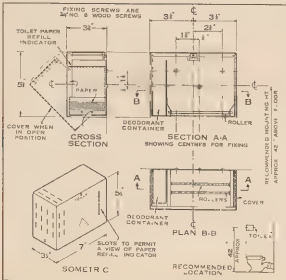
The "Toilex" has been proved in service. Architects have specified it for use in Federal and State Government Departments, Technical Schools, Office Buildings of the State Electricity Commission and Metropolitan Gas Co., and in many Banks and Commercial Buildings.

## ARCHITECT'S SPECIFICATION

The Contractor shall provide and install in each W.C. compartment in a position where directed a "TOILEX" Deodorant and Interfold Toilet Paper Container, as supplied by the Dominant Chemical Co. (Deodorant tablets and toilet paper to be supplied by others.)

## OTHER PRODUCTS

Liquid Toilet Soap Dispensers, Lyptol Disinfectant, Santone Carbolic Soap Cleanser, Camolene Disinfectant, Lyptol Soap Cleanser, Phenyle, Liquid Toilet Soap, Fly Spray, Haula Blocks, Lysol, Metal Polish, Floor Wax, Deluxe White Cleanser, Camolene Soap Cleanser, Mop Oil, Dust Layer, Toilet Refills, Deodorant Tablets, etc.





## DOMINANT CHEMICAL CO.

421-423 COVENTRY STREET, SOUTH MELBOURNE, S.C.S

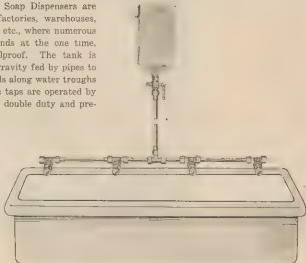
TELEPHONE: MX5745 (3 lines)

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### MULTIPLE LIQUID TOILET SOAP DISPENSERS FOR FACTORY USE

The Multiple Liquid Toilet Soap Dispensers are specially designed for use in factories, warehouses, public buildings, theatres, clubs, etc., where numerous people desire to wash their hands at the one time. They are strong, efficient, foolproof. The tank is placed high up on the wall and gravity fed by pipes to taps, which are placed at intervals along water troughs or over basins as required. The taps are operated by 2 metal valves which perform a double duty and prevent any leakage. There being no washers to perish or wear out, long life and efficient service is guaranteed.



THE MULTIPLE TOILET SOAP DISPENSER.

### LIQUID TOILET SOAP DISPENSERS FOR OFFICE AND PRIVATE USE

The all-metal, chrome-plated Liquid Toilet Soap Dispenser for office and private use (illustrated on left) is modern in design, strong and efficient.



SINGLE UNIT TOILET SOAP DISPENSER.

#### OTHER PRODUCTS:

Disinfectants.—Lyptol, Camolene, Sanolene, Phenyle

Disinfectant Liquid Soaps.—Lyptol, Camolene, Ammoniated Wash Kleen, Sanatone, Tollene Liquid Toilet Soap.

Deodorant Blocks and Tablets, Floor Wax, Dust Layer, Mop Oil, Floor-brite (no rub liq. wax), De Luxe White Cleanser, Metal Polish, Powermar Fly Spray, Kwick Kleen Powder, "Toilex" Deodorant and Toilet Paper Containers and Refills, "Dermos" for Protection Against Dermatitis.

# LUSTRAL CHEMICAL COMPANY

767 MOUNT ALEXANDER ROAD, MOONEE PONDS, VICTORIA

Telephone: FU5129

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## "LUSTRAL" LIQUID TOILET SOAP DISPENSERS

The "Lustral" push-button type soap dispenser is of pleasing appearance and sturdy construction. The wall bracket and the body are cast in one piece of heavy brass, which is finished in chromium plate.

The globe is of white glass; the solid brass top and filling cap are chromium plated.

The dependable "push-button" type of valve, incorporated in the construction, is mechanically simple in design and, as the pressure on the valve is neither up nor down but directly against the wall, any tendency to strain the screws or fastenings in operation is eliminated.

This "Lustral" dispenser is appropriate for use with the finest lavatory fittings and is recommended for installation in the bathrooms or lavatories of Private Residences, Hotels, Hospitals, Clubs and Public Buildings.

The wall bracket is fitted with three screw holes, providing a solid mounting, which is easily fitted to tiles, texture finishes, or any type of wallboard.



Other "Lustral" Products include:—

### "LIQUID TOILET SOAP"

#### LIQUID FLOOR SOAPS AND CLEANSERS:

"AM" PINE MIST (60 in. AMON) — Pine Oil, p. 400  
"AM" PINE MIST (60 in. AMON) — Pine Oil, p. 400  
"AMON" (Ammonia, Chlorine)

#### DISINFECTANTS:

"WHITE PINE"—Pine Oil, p. 400  
"HYPO WHITE"—Sulphuric Acid  
"EUREKA"—Sulphuric Acid

#### DEODORANTS:

"FRAGRANCE"—Pine Oil, p. 400  
"KLEENAX"—Perfumed Sterilizing Toilet Spray for Hotels, Theatres, Places, etc.

#### POLISHING WAXES:

"LUSTRAL"—Pine Oil, p. 400  
"LUSTRAL"—Pine Oil, p. 400  
"LUSTRAL"—Pine Oil, p. 400

#### PASTE CLEANSERS:

"KLEENAX"—Pine Oil, p. 400  
—Pumice Cleaners for Baths, Sinks, Walls, Tiles, etc.

#### INSECTICIDES:

"Fly Spray"—Fly Spray  
"Fly Spray"—Fly Spray  
"Fly Spray"—Fly Spray

Complete range of Brushes, Mops, Cleaning Cloths and Utensils, etc.

## MULTIPLE SOAP DISPENSERS

"Lustral" Multiple Soap Dispensers are solidly constructed throughout and are made to the following specifications:—

Tank: White Enamelled Iron, 10 in. wide x 12½ in. x 5 in. deep. Capacity 2½ gallons.

Piping: ½ in. B.S.P. Chromium Plated Finish.

Valves: Solid Brass, Chromium Plated. A check valve is fitted behind each delivery valve, which operates when valves are removed for cleaning or adjustment. This eliminates the need for draining the system or plugging the valve sockets.

### Installation:

One 2½-gallon tank is of sufficient capacity to service up to 12 valves; an extra tank is recommended for each additional 12 valves.

The tank is fitted with four brackets and is usually mounted in a central position above the valves; however, we will be pleased to co-operate



in cases where it is desirable to install the tank in other locations.

The heavy duty valves are easily removed for cleaning, and are designed to withstand hard use and even abuse.

**PIPES, FITTING  
and  
DRAINAGE**

SECTION  
**30**  
SECTION

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CATALOGUES 1 to 6

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# HUME PIPE CO. (AUST.) LTD.

Head Office:

"KINNEAR HOUSE," Cr. KING & LITTLE COLLINS STS., MELBOURNE. Tel. M 1545

Branch Offices:

South Australia: Railway Terrace, Keswick Tel. L 542-3

West Australia: Subaco. - Tel. W 2225

New Zealand—Head Office, Wellington

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I

## Hume Concrete Pipe

The Hume Pipe Co. (Australia) Ltd. has during the past 26 years been the leader in Concrete Pipe manufacture, and the Hume process of manufacture is in operation in all the leading manufacturing centres throughout the world.

Continuous research and experimental work has helped to produce concrete pipes of the highest quality and maintained a standard unsurpassed in the world today.

Pipe reinforcements are entirely fabricated by patent automatic machines which electrically weld all cross joints in the pipe. This process provides for accurate placement of reinforcement in the pipe, ensuring absolute dependability.

## Sewerage, Drainage and Culvert Pipes

For general purposes pipes are made to comply with the Australian Standard Specification for Concrete Drainage Pipes No. A.12 1937.

Pipes can also be supplied to meet specifications demanding greater test requirements. These latter pipes are designated as Class XX to indicate that the specification calls for a higher test than the standard types.

Standard pipes for the conveyance of sewage, industrial wastes and storm water, but under internal pressure are manufactured in both reinforced and non reinforced concrete. The classes are designated as follows—

Class C—Concrete Reinforced Concrete Pipes for normal test.

Class X—Similar to Class C, but more heavily reinforced to carry greater external loading.

## Sewerage Pipes with Spigot and Faucet Joints

Class C Pipes are normally supplied in sizes 4 in. to 24 in. diameter.

Classes S and X and XX (as required) are normally supplied in sizes 4 in. to 10 in. diameter.

## CULVERT AND DRAINAGE PIPES (Reinforced Concrete)

Supplied in Classes S and X to reinforce.

Sizes 4 in. to 9 in. diameters, S and P or Plain Ends.

Sizes 12 in. to 24 in. diameters, S and P, External Flush Joints or Plain Ends.

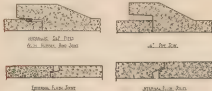
Sizes 24 in. to 72 in. diameters, Internal Flush Joints or Plain Ends.

## Hydraulic Pipes (Internal Pressure)

Reinforced Concrete Hydraulic Pipes are used for the conveyance of water and sewage under internal pressure. The rubber ring joint provides watertightness with flexibility. The rubber gasket rings are provided with the pipe.

These pipes are easily and quickly laid and have been installed in large quantities in Australia, New Zealand and the Far East, for gravitation, reticulation and pumping mains for town and country water supplies, and sewerage works. They are also largely used in both large and small irrigation schemes and, in the latter, pipes are provided, where required, with outlets at frequent intervals to facilitate watering.

Hydraulic pipes are designed to meet the specified test requirements and are economical and durable.



## Some Representative Users of Hume Concrete Pipes

**HYDRAULIC PIPES:**  
Victoria—Melbourne & Metropolitan Board of Works, State Rivers & Water Supply Commission, and Waterworks Trusts throughout Victoria.

New South Wales—Metropolitan Water, Sewerage & Drainage Board, Public Works Department, and Water Conservation & Irrigation Commission.

Queensland—Brisbane City Council.

South Australia—Engineering Water Supply Department.

Tasmania—Public Works Department.

West Australia—Metropolitan Water Supply, Sewerage & Drainage Dept.

## SEWERAGE AND DRAINAGE PIPES

Many thousands of feet of sewerage and drainage pipes have been supplied to the leading authorities in all States of the Commonwealth, their size ranging from 4 in. to 72 in. in diameter.

## CULVERT PIPES

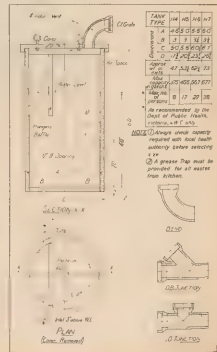
Large quantities of culvert pipes have been used in all States up to 72 in. in diameter.

## Hume Septic Tanks

The most simple effective small sewage disposal system in the Hume Septic Tank, combined with an absorption system by means of agricultural pipe drains or soakage pits for effluent distribution.

Hume Septic Tanks are manufactured in a similar manner to Hume Concrete Pipes and are reinforced throughout. They are simply installed and instructions are furnished in this regard for the guidance of purchasers.

These Septic Tanks are designed to suit the particular requirements of State Health Authorities and in Australia is given beneath of the type as made in Victoria. It is necessary to obtain the approval of the Local Health Authority with reference to its own by-laws, as these, in some cases, vary in regard to the generally accepted capacities.



Manufacturers of Electrolytic-Welded Steel Pipe, Concrete Lined Steel Pipe,  
Oil Tanks, Gas Holders, and Welded Structures.

South Australia: Mile End, Kensington.  
Tel. L5112-3.  
West Australia: Subiaco. - Tel. B.3693.  
New Zealand: 8 Quay Street, Auckland.

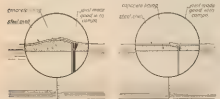
N.S.W.: 65 Clarence St., Sydney.  
Tel.: 8W.4137  
Queensland: Montague St., South Brisbane  
Tel.: J.1441.  
Tasmania: Cr. Dunn & Macquarie Streets

### MILD STEEL CONCRETE LINED PIPES

Waco Steel Pipes are manufactured from mild steel plates having a minimum tensile strength of 38 tons per square inch. These plates are rolled or formed to cylindrical shape, and then rolled or formed to pipe shape on rolling machines using specially prepared welding flux and welding wire to give welded joints that are 100 per cent. efficient.

Pipes are made in diameters from 3 in. to 10 ft. The standard length is 20 ft., but pipes can be supplied in lengths from 5 ft. to 45 ft. according to requirements.

Hume Steel Pipes may be joined by welding, bolted flanges, rubber ring joints or expanded lead and compo flange joints, but previous practice, any of these tends to be made to customers' orders. Modern practice tends more and more towards continuously welded pipes, which are simple and effective types of joint. These are ball and socket joint for pipes over 24 in. diameter and spherical slip joint for pipes 24 in. and under. Both of these joints provide for extreme ease of entry and jacking in pipelaying. The ball and socket joint is made up of two parts, one of which is a ball and the other a socket. The ball is 120° conical at one of the joints for welding.



### Spherical Slip-In Joint

Pipes may be supplied coated or uncoated, or painted, as required. A large percentage of our pipes are coated with a pitch enamel coating approximately 1/4 in. thickness, protected externally with an impregnated paper felt, or heavier coating, but can also be supplied with a less costly coating consisting of a mixture of 50 per cent. Trinidad bitumen and 15 per cent horizontal rosin tar applied hot and reinforced with a wrapping of heaviest thoroughly impregnated with the same mixture, after which the pipe is rolled on a dry sand bed until cool enough to handle.

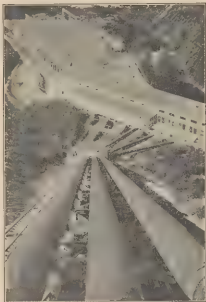
For internal protection, Huma steel pipes are lined internally with cement concrete by the Huma centrifugal process. The thickness of lining varies from 3/4 in. to 1 in., according to the pipe diameter. This lining protects the steel from internal rusting and this vastly increases the life of the pipe in addition to reducing the frictional losses over the entire life of the pipe.

To show the efficiency of the Concrete Lining, a 91 in diameter 8500 Pipe manufactured from 3/16 in. mild steel plate, was lined with a 9/16 in. thickness of cement concrete. The steel was perforated with holes varying from half inch to one inch in diameter. The pipe was then set up for hydrostatic testing, and the pressure was gradually raised to 50 psi per square inch, which was the limit of the pressure gauge. The pressure was held for five minutes without change. This test, conducted under the control of the M.E.B., conclusively showed that the pipe was capable of giving good service, even though, after one month of use, the steel wall had become perforated due to corrosion or other cause.

Special Pipes of any shape, and suitable either for faucet or flanged joints, are manufactured as required. Write for further literature and information. Quotations should always

Hume Steel Limited are Contractors in the Melbourne and Metropolitan Board of Works Melbourne, Metropolitan Water, Sewerage and Drainage Board, Sydney, Metropolitan Water Supply Department, Brisbane, Adelaide, Perth, Hobart and New Zealand State Rivers and Water Supply Commission, Auckland, Taranaki, Canterbury, Otago, South Island, Victoria, Tasmanian Water Supply Department, Cape Breton, also Country Water Trusts and Authorities throughout Australia, Colonial Gas Company, Melbourne, Brighton Gas Company, Melbourne, Fremantle Gas Company, West Australia, Adelaide, Port Phillip, Tasmania; also Vacuum Oil Co. (Pty.) Ltd. of the "Shell Line".

In addition to pipe manufacture, the operations of the Company cover a wide range of mild steel products fabricated by the welding process. These include all types of pressure vessels, such as storage air receivers, to 84 in. diameter spherical gas compressors of all welded construction. Railway rolling stock including complete oil tankers. Oil storage tanks from 500 gallons to 1,300,000 gallons. Low pressure gasometers, and a host of fabricated welded products.



TARRALEAH HYDRO-ELECTRIC SCHEME, TASMANIA.  
Hillside Pipes, 49 in., 36 in., and 60 in. diameters.

BLANDFORD'S CATALOGUE

# PIPE LININGS (AUSTRALASIA) PTY. LTD.

MANUFACTURERS OF "BITULYND" CORROSION-PROOF WATER PIPES

Trade Mark "BITULYND"

Patent Nos. 12350/33, 11676/33, 11617/33

Telephones LA 2367

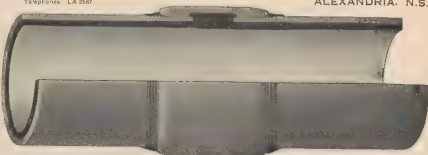
KINGSCLEAR ROAD

(near Henderson Road Post Office)

ALEXANDRIA, N.S.W.

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## "BITULYND"

All Sizes Available  
from half-inch upwards.

Bitumen lined water pipes have been in extensive practice in England and America for some years past and are now available in Australia.

The bitumen lining gives full protection against internal corrosion, rust, and chokage, which is always experienced with unlined pipes.

**Increased Water Flow.**—Consequent upon the smooth bitumen lining and reduction of friction, the water flow is increased by approximately 25 per cent. This means increased efficiency.

**Full Bore Capacity.**—Due to the absence of internal rust, corrosion and precipitation, a full-bore capacity is maintained. This reduces maintenance costs.

**Saves Repairs and Replacements.**—Consequent on the absence of internal corrosion, rust and chokage, a big saving is achieved in the elimination of recurring repairs and replacements of unlined pipes.

**Fully Tested.**—Bitulynd Pipes have been fully tested under working conditions throughout Australia, the approval of the Sydney Metropolitan Water Board having been held for over eleven years.

**Drinking Water.**—The bitumen lining does not affect drinking water. In proof of this the main Pressure Tunnels supplying water to the Sydney Metropolitan area are bitumen lined.

**SPECIFICATIONS** should read "BITULYND" Pipes (cut with hack-saw, not pipe cutters) and "BITULYND" Fittings, using "BITULYND" Compound Paint on threads and end of pipe before connecting. Allow connected pipe line to dry for one hour, then flush for 10 minutes before taps are fitted.

RAMEY'S CATALOGUE

**BEST QUALITY GALVANISED IRON PIPES**, with the modern improvement of an **INTERNAL BITUMEN LINING** which gives full Protection against internal corrosion, rust and precipitation. SAVES REPAIRS AND REPLACEMENTS—DOES NOT AFFECT DRINKING WATER—GIVES INCREASED EFFICIENCY AND REDUCED COSTS

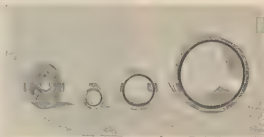
**External Use—(Main to Meter).**—Approved by the Sydney Metropolitan Water Board as the only alternative to copper in main-to-meter services. Also approved by the Hunter District Water Board, specified by many leading Architects and Engineers. Costs considerably less than copper pipes.

**Internal Use—(Meter Inward).**—Specified by many leading Architects and Engineers by reason of Improved Water Service and Reduced Costs over a period of years, Increased Water Flow, Maintenance of Full Bore Capacity, Saving of Repairs and Replacements.

Well-known constructions in which Bitulynd Pipes were specified include Kandos Cement Co. Ltd., B.A.L.M. Paint Co. Ltd., Lysaght Bros. Ltd., General Motors Ltd., Pagewood, Marchants Ltd., Commonwealth Department of Interior.

**Industrial Use.**—As Bitulynd Pipes are impervious to salt water, marine growth and pre-determined commercial acids, they are being used extensively by Industrial Companies such as Elliotts and Australian Drug Co. Ltd., Rozelle.

The Manufacturers will be pleased to answer all enquiries and supply samples on request.



Existing unlined pipe and Bitulynd Corrosion Proof Pipes (Note Corrosion of unlined pipe at left)

Manufacturers of

ALL TYPES OF VALVES, COCKS AND  
FITTINGS IN BRONZE, IRON AND  
STEEL FOR USE WITH STEAM,  
WATER, OIL, AIR AND GAS SERVICES

**M. B. JOHN Pty. Ltd.**

Works and Head Office

**BALLARAT, VICTORIA**

Telephone 313 (2 lines)

Agents at

SYDNEY, MELBOURNE, BRISBANE,  
ADELAIDE, PERTH, HOBART  
Established 1898

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**4**

# JOHN VALVES

**IN  
BRONZE  
IRON  
and  
STEEL**



**FOR  
STEAM  
WATER  
AIR, OIL  
and GAS**

**R**EFRIGERATION, Fuel Oil and many other types of built-in Industrial Plant and Equipment, depend on the safe and sure action of the various kinds of valves and fittings, incorporated in their construction, in order to give satisfactory service. Dependable service is one factor which has helped to build up the reputation enjoyed by the makers of "John" products.

Every type of "John" valve is of strong, rugged construction and is especially designed for the function it has to perform.

Valves may be classified by the materials from which they are made or the services to which they are applied. In certain instances, cast iron valves may be used alternatively with bronze, more so in the case of the smaller sizes; in other cases, the use of Cast Iron or Cast Steel is the logical continuation of the smaller sizes of Bronze.

Actual selection depends, however, on the user's experience, arrived at by the record of service or consideration of economy.

The Classification chart, which appears on the opposite page will be found useful, but should be used in conjunction with our general Catalogue No. 20 and Brochure 100.

## PARTICULARS REQUIRED WHEN ORDERING

It will save delay and possible disappointment if customers, when ordering any of the fittings shown in the catalogue, will give full information as to the working conditions, and include the following particulars:—

- 1 Size of Valve or Fitting
- 2 Catalogue Figure number
- 3 If left or right hand is required (where necessary)
- 4 Working pressure, and also the total temperature if for super-heated steam
- 5 Whether intended to work under steam, water, air, oil, etc.
- 6 If required to close anti-clockwise, as all our standard valves close with a clockwise rotation of hand-wheel

## Specify "JOHN"

Unless otherwise noted, all valves controlling (steam, water, air, oil and/or gas) lines shall be genuine JOHN (bronze and/or cast iron or steel) valves of the type and size

- (a) as specified hereunder
- (b) as set out in later Schedule
- (c) as shown in Drawings.

## COMPLETE CATALOGUE

We will be glad to mail a copy of our General Valve Catalogue No. 20 and Brochure 100, to architects and engineers on request in writing. These publications give full details of sizes, application, construction and maintenance.

Our Service Department will issue special literature from time to time and we will be pleased to post copies on request.



# RANGE OF JOHN VALVES

References in last column are to (a) Brochure 100 (b) General Catalogue No. 20

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## BRONZE

Kind	General Purpose	Type	Working Pressure (in lbs. per sq. in.)					Temp.	Reference
			Steam	Water	Oil	Air	Gas		
Gate	For services requiring valves to be either normally full open or closed	Standard	200	200	200	200	200	—	Sheet No. 1
		Medium	150	150	150	150	150	—	
		Quick Action	150	150	150	150	150	—	
		Heavy	250	250	250	250	250	—	
Globe	For services where supply is to be throttled	Standard	150	150	150	150	150	—	Sheet No. 2
		J-Disc	125	125	125	125	125	—	Sheet No. 3
		NKL—(I.S.)	150	250	—	—	—	—	Sheet No. 4
		NKL—(O.S.)	250	350	350	350	—	500	Sheet No. 3
		Seger (B.R.)	250	350	350	350	—	500	Sheet No. 5
		Seger (NKL)	250	350	350	350	—	500	Sheet No. 5
Check	For services permitting flow in one direction	Standard	150	250	250	250	—	—	Sheet No. 6
		Medium	125	225	225	225	—	—	
		Vertical	150	250	250	—	150	150	
		Swing	—	150	150	—	—	—	
		Donut	—	—	—	150	—	—	
		Square Body	150	250	250	250	—	—	
		NKL	250	350	350	350	—	500	
		NKL (Stop)	250	350	350	350	—	500	
		Super	250	350	350	350	—	500	
		Super (NKL)	250	350	350	350	—	500	
Parallel Slide	For high-pressure steam and feed water lines	Non-rising Spindle	250	150	300	300	—	400	Sheet No. 12
		—	—	—	—	—	—	—	—
Cocks	Used in low-pressure steam, also boiler blow-offs, etc.	Deep Barrel	150	250	250	—	—	—	Sheet No. 7
		Packed Gland	150	250	250	—	—	—	
		Packed Gland (Heavy)	200	300	300	—	—	—	
		Blow-off	150	—	—	—	—	—	
		Blow-off (Heavy)	250	—	—	—	—	—	
		Combined Check Stop and Check	150	—	—	—	—	—	
Water Gauges		Pat	150	—	—	—	—	—	Sheet No. 8
		Asbestos Packed	250	—	—	—	—	—	
		(Massive)	180	—	—	—	—	—	
		(Standard)	150	—	—	—	—	—	
Spring Relief	Boiler Mountings and Accessories	Packed Gland	150	—	—	—	—	—	Sheet No. 8
		Standard	80	—	—	—	—	—	
		Open Spring	250	—	—	—	—	—	
		Enclosed Spring	150	—	—	—	—	—	
Whistles		Open Lantern	150	—	—	—	—	—	Sheet No. 20
		Spring Loaded	150	—	—	—	—	—	
		Open	150	—	—	—	—	—	
		Pat	150	—	—	—	—	—	
Radiator	For steam or hot water radiators	Angle or Globe	To Order	—	—	150	—	—	—

\*Liquids that are not injurious to copper alloys

## CAST IRON

Kind	Type	Working Pressure (in lbs. per sq. in.)					Reference
		Steam	Water	Oil	Air	Temp.	
Gate	Non-rising Spindle	150	175	175	—	400	Sheet No. 9
	External	150	175	175	—	400	
Stop	Non-rising Spindle	—	175	—	—	—	Sheet No. 10
	External Screw	150	250	—	250	400	
Check	Automatic	150	250	—	250	400	Sheet No. 11
	Retention	150	250	175	—	—	
Parallel Slide	Vertical	150	250	—	250	—	Sheet No. 12
	Stop Check	150	250	—	250	—	
Safety	Non-rising Spindle	150	300	250	250	400	Sheet No. 12
	6 in. lever	150	300	250	250	400	
Safety	Spring Loaded	150	150	150	150	400	See Catalogue No. 20
	Open Spring Relief	150	150	150	150	400	

## CAST STEEL

Kind	Type	Working Pressure (in lbs. per sq. in.)					Reference
		Steam	Water	Oil	Air	Temp.	
Gate	Non-rising Spindle	250	350	—	350	800	Particulars on Request
	External	250	350	—	350	800	
Stop	External Screw	250	350	—	350	800	Particulars on Request
	—	250	350	—	350	800	
Check	Automatic	250	350	—	350	800	Particulars on Request
	Retention	250	350	—	350	800	
Parallel Slide	Vertical	250	350	—	350	800	Particulars on Request
	Stop Check	250	350	—	350	800	
Safety	Non-rising Spindle	250	350	250	250	800	Particulars on Request
	6 in. lever	250	350	250	250	800	
Safety	Spring Loaded	250	250	250	250	800	Particulars on Request
	Open Spring Relief	250	250	250	250	800	



# KELLY & LEWIS LIMITED

*Hydraulic*  *Specialists*

Sales Division:

**K. L. DISTRIBUTORS PTY. LTD.**

460 BOURKE STREET, MELBOURNE, VICTORIA — MU 7187-8

Interstate Representatives:

N.S.W.

Alfred Snashall Pty. Ltd.,  
477 Kent St., Sydney.  
M 2205.

QUEENSLAND

Alfred Snashall Anthony Pty. Ltd.,  
74 Eagle St., Brisbane.  
B 5735.

SOUTH AUSTRALIA

Wm. Adams & Co. Ltd.,  
157 Waymouth St., Adelaide.  
Cdn 5765.

WESTERN AUSTRALIA

Atkins (W.A.) Ltd.,  
804 Hay St., Perth.  
S 3151.

TASMANIA: K.L. Distributors Pty. Ltd., Hobart.

NEW ZEALAND: John Burns & Co. Ltd.,  
Auckland, Wellington, Greymouth, Christchurch.

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5

## A COMPLETE RANGE OF PUMPS for Every Pumping Duty!

### "K. L." PUMPS include—

Centrifugal Pumps in Single and Multi-stage, Single and Double Suction, Solid and Split Casing, Horizontal or Vertical mounting for every pumping purpose and for handling all manner of liquids or semi-solids in suspension. Hand, Gear, Piston, Turbine Borehole, Axial Flow, Plunger, Steam Boiler Feed, and Vacuum Pumps, etc.

### COMMON DUTIES—

Water Supply	Mine Sinking
Hot Water Circulating	Mine Station
Drain Circulating	Dewatering Sumps
Condensate Cooling Water	Sand and Gravel
Radiation	Nozzle
Sterile Water	Irrigation
Air Conditioning	Sewage
Mains Boosting	Town Supplies
Boiler Feed	Oil
Fire Protection	Effluents
Sludge	Pulp
Slimes	Paper Stock
Filtrate	Petrol
Chemicals	Crude Oil



### GENERAL PURPOSE PUMPS

A standard type pump made for 3.5 hp or 22.5 lts and used for motor housing, household and rural water supply, etc.



### LIGHT DUTY PUMPS

A Type "M" Pump built for light and medium duty and used for elevating small quantities of water under low to medium head conditions. Commonly used for lifting water from shallow wells and circulating brine through Milk Condensers, Refrigerators, etc.



### HIGH PRESSURE PUMPS

Above is shown a Type "M" Multi Stage, High Pressure Pump as used in Sea service, mine station, waste handling and town water supply.

WHEN faced with problems of handling liquids in motion, the services of Kelly & Lewis Ltd.'s technical sales staff are at your disposal. Without cost or obligation they can specify and supply, from Australia's largest range of Pumps, the right type of pumping plant to suit your requirements.



A section of the new Hydraulic Research and Testing Laboratory now installed at the Kelly & Lewis Factory, Springvale, Victoria, where new types of Pumps are designed and tested for better performance.

—BAYLY & CATALOGUE

# H. P. GREGORY & COMPANY PTY. LIMITED

Representatives  
VICTORIA:  
H. W. J. Anderson Pty. Ltd.  
TASMANIA:  
H. M. Gamford

Engineers and Machinery  
Merchants

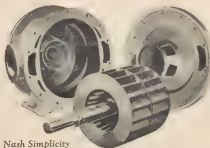
74 CLARENCE STREET, SYDNEY

Representative  
WESTERN AUSTRALIA  
Flower, Davies & Johnson Ltd.  
QUEENSLAND  
Underhill, Day & Co. Pty. Ltd.

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6

## PUMPING EQUIPMENT FOR ALL INDUSTRIES



Nash Simplicity

### NASH CENTRIFUGAL PUMPS

For all centrifugal pump services including Booster Pumps for buildings.

Compact—motor armature and pump impeller are mounted on the same shaft—simplified, no bearings in pump casing, only one stuffing box—accessible—pump impeller can be removed without breaking pipe connections. Size, 1 in. to 6 in. of bronze fitted standard construction.

### NASH SELF-PRIMING SUMP PUMPS

The Nash Self-Priming Sump Pump is designed for handling seepage water and liquids reasonably free from solids. The pump is mounted above the sump, where it is readily accessible. There are only two moving parts the centrifugal impeller and the vacuum priming rotor—both rotate without metal to metal contact in casing. Both are mounted on the same shaft that carries the rotor of the electric motor, making possible a compact assembly.

### NASH SEWAGE EJECTORS

For pumping unscreened sewage or drainage from basements below the street sewer level, handling crude sewage from low level districts, pumping effluent, sludge, or other heavy liquids.

The Jennings Sewage Ejector is of the pneumatic type. Air compressed to the necessary pressure by a Nash Hytor Air Compressor is used as the motive power to pump the accumulated sewage from a pot to the sewer. Air is compressed to the pressure at which it is used. There are no storage tanks, reciprocating air compressors or screens. Air valves and reducing valves are avoided. Sizes from 30 to 300 gallons per minute.

### NASH VACUUM PUMPS AND COMPRESSORS

Hytor Vacuum Pumps and Compressors have but one moving part and operate without metal to metal contact in the pump. Supplied in standard sizes up to 5,000 C.F.M. vacuums to 29.5 in. Hg.—pressures to 90 lbs.

### NASH VACUUM STEAM HEATING PUMP

Removes air and condensation from return lines of vacuum steam heating systems, discharges the air to atmosphere and returns water to the boiler. Pump con-

sists of two independent units combined on a single casing. Air unit exhausts air and vapours and delivers these to atmosphere without back pressure. Water unit removes the condensate and pumps it directly to the boiler. Capacities up to 300,000 sq. ft. of equivalent direct radiation.

### BEECOX VACUUM PUMPS, COMPRESSORS AND GAS BOOSTERS

Beecox pumps are operated on the full rotary principle and are positive at all speeds. Automatic oil circulating systems are standard on all models. Supplied with plain or slipper vanes, air or water cooled. Capacities from 2½ to 300 C.F.M., vacuums to within 5 in. of the barometer or better. Pressures on air or gas to 15 lbs.

### BEECOX LIQUID PUMPS

Small compact rotary high-speed self-priming pumps. Water pumps, oil pumps and special liquid pumps.

### PEERLESS CENTRIFUGAL SELF-PRIMING PUMPS

Peerless electric motor driven pumps are self-priming and are specially adapted for sump and seepage service with automatic float control. The entire pump is located in a convenient spot above water level—submergence is not necessary. Sizes 1½ in., 1½ in., and 2 in.

### EBSRAY ROTARY GEAR (VIKING TYPE) PUMPS



For pumping most clean liquids that will flow. A simple positive slow-speed pump with only two moving parts. Capacities from 500 to 5,000 gallons per hour—pressures to 100 lbs. Available in cast iron, zinc-free bronze, or stainless steel.

### EBSRAY BOILER FEED PUMPS

Rotary internal gear positive high pressure pumps requiring no internal lubrication and fitted with water lubricated bearings. All pumps fitted with automatic bypass pumps are specially designed for fitting to automatically controlled steam boilers.

### EBSRAY HIGH VACUUM PUMPS

A precision built industrial vacuum pump for vacuums to 0.005 mm. of Hg. or better. Built in two sizes, 1 C.F. and 5 C.F. displacement.

All the above equipment is manufactured in Australia.

Bulletins and complete information is available upon request.

RAMSAY'S CATALOGUE

**FIRE PROTECTION**

SECTION

**31**

SECTION

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CATALOGUES 1 to 3

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# WORMALD BROTHERS PTY. LTD.

FIRE PROTECTION ENGINEERS SINCE 1889

HEAD OFFICE: PARK WORKS, YOUNG STREET, WATERLOO, SYDNEY, N.S.W. MX 1071

31

I

## LIST OF BRANCHES.

Victoria: Warrnambool Road, Fishermen's Bend, Melbourne MX 3121.

South Australia: 119 Wymouth Street, Adelaide, Adelaide 4867.

Newcastle: 24 Hunter Street, Newcastle N 2735.

North Queensland: Windsor Street, Townsville, 2012.

South Queensland: 132-146 Edward Street, Brisbane, N 3608

West Australia: 68 King Street, Perth N 8395.

Tasmania: 31 Argyle Street, Hobart, Hobart 4057

Darwin: Messrs. Fanning Brothers, Darwin.

New Zealand: Custom House Quay, Wellington. 44-789.

Christchurch: 204 Cashel Street, Christchurch. 84-182.

Auckland: Buckland House, Custom Street, Auckland. 65-428.

## COMPLETE FIRE PROTECTION SERVICE

We have the correct equipment for EVERY fire risk. The appliances listed comprise only portion of our complete range, and technical reports by expert engineers on

any fire protection problem will be submitted without obligation.

## THE "GRINNELL" AUTOMATIC SPRINKLER AND FIRE ALARM SYSTEM

Reduces Fire and Loss of Profit Insurance Premiums by as much as 50 per cent. (Up to 80 per cent. in Special Cases.)



"Grinnell" Quarterload Bulb Sprinkler Head

### Automatic Sprinklers

Each sprinkler head is designed to cover an average floor area of 80 sq. ft., the maximum being 100 sq. ft. In general types of buildings, in zinc mills and on the stage side of proscenium walls in theatres, the maximum area covered is 64 sq. ft.

### Control Valves

The Sprinkler System is controlled by a set of control valves which should be fixed on the ground floor, and must be readily accessible from the outside of the building. The minimum space required is 6 ft. 0 in. high x 4 ft. 0 in. wide x 1 ft. 6 in. deep, but 6 ft. 0 in. in width should be provided if possible. Not more than 1,250 sprinkler heads may be controlled by one set of valves.

### Alarms

An alarm is fitted to the outside wall of the premises, and a direct Fire Brigade alarm transmitter is installed at the control valves. Both alarms operate automatically.

### Sizes of Pipes

If not more than 115 sprinklers are in direct communication on any one floor, the diameter of the largest pipe (internally) is 4 in. If over 115 sprinklers, the size is 6 in. Six-inch is the largest pipe used irrespective of the size of the installation or the number of buildings protected. Other pipes range from 3/4 in. down to 1 in. diameter. Rising mains for premises of more than one floor usually do not exceed 4 in.

### Concealing of Pipes

Piping may be concealed in new buildings by running above false ceilings and prickling sprinkler heads through. Concealed spaces formed between ceilings and floors above should not exceed 35 in. measured from top of plaster to underside of concrete slab in the case of concrete construction, and 50 in. measured from top of plaster to underside of floor boards in the case of wooden construction. Sprinkler heads may be fitted with copper or brass screw-on caps, which can be painted white, or plaster may be made good around sprinkler heads after plaster sheets have been erected. The layout of sprinkler heads can be designed to suit fancy plaster ceilings.

### Water Supplies

1. Town's Main: This is usually the primary supply to an Automatic Sprinkler System. Branches must be brought direct from the mains and may be used only for sprinklers and systems, except that a 1 1/2 in. pipe or its equivalent may be used for other purposes, if special permission is obtained. The size of branches is usually 4 in. or 6 in. A certain minimum pressure is required for sprinkler purposes, and if the pressure from the mains is insufficient, a booster pump is required. A space 11 ft. 0 in. x 10 ft. 0 in. x 8 ft. 0 in. high on the ground floor should be reserved for the pump and accessories.

2. The following secondary water supplies may be used if two independent town's main connections are not available:  
A. Elevated Gravity Tank erected either on the building or on a separate structure. Capacity is 7,500 gallons (1,166 cu ft.) where base of tank is 15 ft. above the highest sprinkler, or 5,500 gallons where the base is 10 ft. above the highest sprinkler. The average weight of 7,500 gallon tanks when full is 46 tons, and of 5,500 tanks 32 tons.

B. Tank and Pump: Where it is inconvenient to erect a tank on a building, a tank and pump may be used. The tank, a 1,000 gallon tank at ground level or lower may be used in conjunction with an automatic electric or petrol engine driven pump. In this case, the tank requires a 3 in. 6 ft. long pipe to pressure tanks are sometimes used as a water supply, the normal size being approximately 40 ft. long x 6 in. diameter, the weight when full is approximately 35 tons. The tank is usually located in the unoccupied building, preferably on the highest floor.

## THE "MULSIFYRE" SYSTEM

The Mulsifyre System extinguishes fires in many types of inflammable liquids by an entirely novel and thoroughly sound method. The underlying principle of the system is to change the nature of the liquid, to turn it, for the time being, from an inflammable liquid into one which is incapable of burning. This instantaneous extinction is achieved by the completely effective method of emulsification.

The Mulsifyre System is accordingly used extensively to protect equipment using inflammable liquids in large quantities, such as all types of electrical gear, including transformers, oil switches, turbine lubricating systems, etc., dip tanks, paint and lacquer stores, varnish works, etc.



"Mulsifyre" System in operation on two 11,000 volt Transformers

KANSAS B CATALOGUE

# WORMALD BROTHERS PTY. LTD.

FIRE PROTECTION ENGINEERS SINCE 1889

31  
1

## "SIMPLEX" CHEMICAL FIRE EXTINGUISHERS

(A Type for Every Purpose)

Reduce Fire Insurance Premiums

Hand Extinguishers are usually supplied of 2-gallon capacity each, and insurance companies, when granting a discount, require one 2-gallon Extinguisher to every 250 square yards of floor area or part thereof, with a minimum of two machines to each floor.

Chemical Fire Engines.—Soda-acid and Foam Extinguishers are also manufactured as 10-gallon and 35-gallon engines for dealing with special fire risks, also in automatic form for protecting dip tanks and other hazardous risks. Full details given freely upon request.

Correct Types to Specify:

"Simplex" Soda-Acid: All general risks other than liquid or electrical.

"Simplex" Foam: All inflammable liquid risks.

"Simplex" Auto (C.T.C. type): For Bio. Boxes, Switchboards and Electrical risks.



"Simplex" 2 Gallon Reversible Extinguisher



"Auto-Simp ex" One-Quart Extinguisher

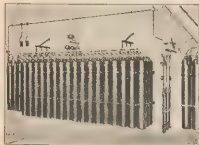
## FOAM FIRE FIGHTING

A complete service is operated covering all fire-fighting problems where smothering by foam is called for. For mobile work, such as Crash Tenders for aerodromes, the Schröder-van Deurs System of mechanically generated foam operating on the special "Simplex" Foam Solution developed in Australia is ideal.

The National "Aer-O Foam" Branchpipes and Fixed Installations are manufactured under licence, including advanced devices such as pressure proportioners.

"Simplex" Air Foam Systems are also made, and National single or double Powder Systems with necessary chemicals available.

## "LUX" CARBON DIOXIDE SYSTEM



Battery of "Lux" Cylinders.

The "Lux" Carbon-Dioxide System is designed to deal with electrical fire risks, such as the protection of electrical switchboards, electrical generators, etc. The extinguishing medium used is compressed carbon dioxide gas, which is non-injurious to materials.

Hand appliances with capacities of 2 lbs., 7 lbs., and 12 lbs., and mobile and hose reel units with capacities from 20 to 100 lbs., are available. "Lux" fixed installations, controlled automatically, are designed to protect various types of switchboards, large electrical generators, high temperature drying ovens, Rotogravure printing presses, etc. Automatic control is either electric or by means of fusible links and cables.



"Lux" 12-lb. Hand Extinguisher.

## "FASPOS" FIRE PROOFING LIQUID

"Faspos" is the ideal fireproofing liquid for application to all types of timber, as well as certain types of textiles, fibres and paper boards, etc. Timbers and other materials treated with "Faspos" may be painted, varnished or

French polished in the ordinary manner. Detailed information regarding the uses and methods of applying "Faspos" are available on application.

WORMALD'S CATALOGUE

# New AUTOMATIC SPRINKLER SERVICE

The Service is new but the Sprinkler is an old friend. The Central Automatic Sprinkler has been favourably known and recommended by leading Australian architects for many years and, in every building where it has been installed, has fully justified the confidence placed in it. Central is now backed by a new organisation comprising highly qualified experts with extensive Australian and overseas experience. Get to know the facts about this new and better service. It will cost you nothing to do so, but may lead to big benefits to your clients.

**CENTRAL AUTOMATIC SPRINKLERS ARE APPROVED  
BY ALL FIRE UNDERWRITERS' ASSOCIATIONS THROUGHOUT AUSTRALIA**



Interchangeable with  
Other Makes.

Because the Central Sprinkler Head is interchangeable with other makes, it may be recommended for alterations to, or extensions of, any existing systems. Tenders for such work will be gladly submitted.

Corrosion cannot attack Central Sprinkler Heads. In accordance with Underwriters' requirements, where conditions would otherwise make corrosion a possibility, every part of each Central Sprinkler Head (not merely the fusible unit) is specially treated to make it impervious to corrosion. Moreover, Central Sprinkler Heads are not subject to fatigue or strain.

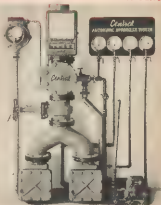
Prices Strictly  
Competitive

All tenders for Central Automatic Sprinkler Installations are based on actual cost. Thus, you are assured of an honest price which will stand the closest investigation.

## Specification Service

With the introduction of a new sprinkler company in the field, architects are strongly advised to invite competitive tenders. This will necessitate providing prospective tenderers with specifications. As a practical service to architects, the Central Automatic Sprinkler Co. Pty. Ltd. has produced a pamphlet of suggestions which will be found helpful in the preparation of specifications.

## Typical Set of Central Control Valves



*Write for  
FREE  
PAMPHLET  
"How to Draft  
a Specification  
for a Sprinkler  
System"*

## CENTRAL AUTOMATIC SPRINKLER CO. PTY. LTD.

*Contractors to the Commonwealth Government*  
422 Little Collins Street Melbourne Tel. MU5685

Represented in All States

Write for Name and Address of Nearest Agent

## Introducing The **ATLAS** SILICA BULB SPRINKLER (TYPE "C") often referred to as the "GLASS BULB" SPRINKLER

31

3

Made in England under British Patents, and fully approved by the Fire Officers' Committee, London and the Australian Fire Underwriters' Association since 1937

Manufactured in fusing temperatures ranging from 135 deg. Fah. to 360 deg. Fah., it has been most widely installed in Industrial Undertakings throughout Great Britain and the Commonwealth of Australia, and came through the "Blitz" and the air raids on London with a splendid record for service under front-line conditions.

Pioneering days are over. The "bulb" type head is firmly established as superior to the solder type head in many important respects.

Some advantages of Atlas Silica Bulb Fire Sprinklers (Type C) are:

1. The operating element of these Sprinklers consists of a small bulb made of Silica, which is a transparent material having the properties of an extremely tough glass; and, like a high-quality glass, IS COMPLETELY IMMUNE FROM CORROSION BY ACID FUMES.
2. Flexible diaphragm has been discarded.
3. Introduction of a metal valve, as used in high pressure steam and water-stop valves.
4. Use of a strut (the Silica Bulb), which is mechanically continuous.
5. Use of castings has been carefully avoided in Atlas Sprinklers, thereby eliminating all latent weaknesses arising from blow-holes and other faults common in small castings.
6. Its durability, sensitiveness and attractive appearance are features which no buyer of modern fire protection can afford to overlook.
7. Specially approved by the Australian Fire Underwriters' Associations and the Fire Officers' Committee, London, for installation in Sprinkler Systems using sea and harbour waters as primary or secondary supplies.

ATLAS SILICA BULB  
FIRE SPRINKLER (TYPE C)  
(Patented)



(Full Size)

## AUTOMATIC FIRE SPRINKLERS PTY. LTD.

### FIRE PROTECTION ENGINEERS AND MANUFACTURERS

#### SYDNEY, N.S.W.:

614-618 Botany Road, Alexandria.  
Box. No. 22, P.O., Mascot.  
Phone: MU-2478, ML-2477.

#### SALES OFFICES AND WORKS

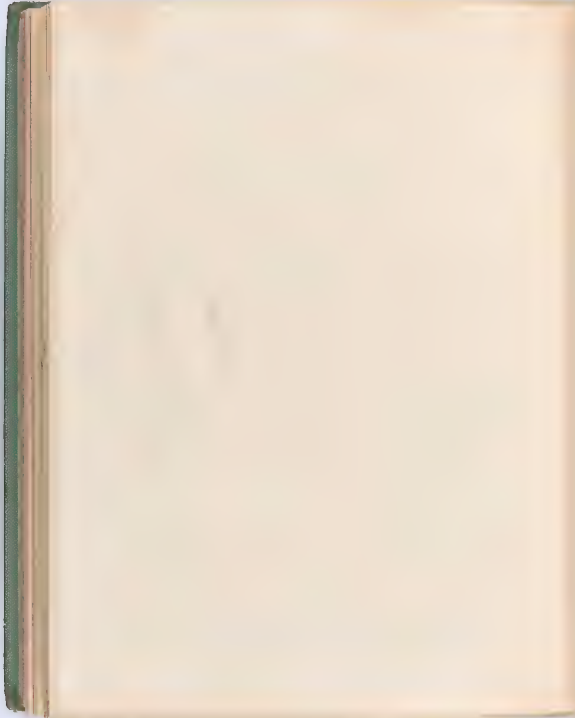
##### MELBOURNE, VICTORIA:

179-183 Barkley Street, Carlton.  
Box 1855, G.P.O. Phone: FJ-3515.

##### BRISBANE, Q.L.D.:

A.M.P. Building,  
Edward Street, Brisbane.  
Box 1067-N, G.P.O. Phone: B 7474.

REPRESENTATIVES IN ALL OTHER STATES AND NEW ZEALAND





**RUSTPROOFING and  
WOOD  
PRESERVING**

SECTION

**32**

SECTION

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CATALOGUES 1 and 2

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## FOR THE TREATMENT OF METAL SURFACES

The protective value of paint depends largely on the nature of the surface to which it has been applied. An adequately prepared metal surface permits the development of maximum protection.

Ferrous metals must be rust and scale free, otherwise the failure of paint is rapid. The life of the paint and its resistance to corrosion may be greatly prolonged by rust-proofing the metal surface with a phosphate coating.

### GRANODINE

Chemical phosphate treatment for iron and steel that produces a stable bond between paint and metal, and for preventing the development of defects in the paint finish.

Recommended for air conditioning equipment, electrical gear, steel partitions, kitchen cabinets, metal furniture of all types, refrigerators and a host of other steel articles.

Granodine treatment is recommended where the finest protection of steel is required.

The plant required is a series of mild steel tanks; processing costs are low.

### ALODINE

The ideal treatment for aluminium and its alloys to ensure corrosion resistance and paint adhesion. Equivalent protective value to the best anodized coatings without expensive electrical and associated equipment.

Non-ferrous metals require specialized treatment to retard corrosion and to ensure adhesion of paint.

By prolonging the effective life of paints, chemical pre-treatment of metals reduces maintenance costs and adds value to plant and structures.

A.C.P. pretreatment processes are cheap and easy to apply. Specify their use for maximum protection.

### DEXIDINE

Phosphoric acid metal cleaner. Prepares steel, aluminium, brass, copper, etc., properly for painting. Removes oil, light scale, eradicates rust, neutralizes rust products, and creates an etched, inert surface that holds paint perfectly.

### ITROFORM

A phosphate coating chemical for galvanised iron or other zinc coated surfaces. Zincs die castings and cadmium plate. Bonds paint perfectly, overcoming the usual peeling of paint. Applied with a brush or spray gun.

### FENDINE

A combined chemical and oil that removes light rust and is effective in preventing steel from rusting in storage or in transit.

### OTSPOT

A chemical paint that holds to hot metal surfaces even at temperatures above 600 deg. F.

Complete details of the foregoing Products and Processes will be supplied on request. Practical demonstrations arranged at the works of British Australian Lead Manufacturers Pty. Ltd.

Processing Contractors in N.S.W.  
Industrial Painters, 178 George Street, Erskineville

BRITISH AUSTRALIAN LEAD MANUFACTURERS PTY. LTD.

P.O. Box 21, Concord, N.S.W.

Also at MELBOURNE, ADELAIDE and PERTH



(PRONOUNCED SOL-IG-NUM)

## WOOD PRESERVING STAIN

## WHITE ANT AND BORER <sup>32</sup> DESTROYER <sub>2</sub>

There is only one genuine Solignum

An article of entirely English Manufacture

SOLIGNUM has established its value over a period of 30 years and is acknowledged in ALL PARTS OF THE WORLD to be the most effective wood preservative. It affords definite protection against DAMPNESS, DISINTEGRATION THROUGH THE ACTION OF THE WEATHER, DRY ROT, WHITE ANTS, BORERS AND THE FORMATION OF ANY FUNGUS GROWTH. It also possesses ANTISEPTIC PROPERTIES which resist the harbouring of INSECTS AND VERMIN.

**ADVANTAGES.** Timber is by nature an absorbent material which contains moisture in the form of sap, it is also continually absorbing or exuding moisture through the surface pores according to variations in the climatic conditions. If the pores of the wood remain unsealed the sap or moisture can escape and the natural process of SEASONING is not interrupted, but if an impervious film such as paint, etc., covers the wood, sealing the pores, the sap in the wood ferments and causes internal decay. SOLIGNUM is non-volatile and dries through penetration. It searches deeply into the fibres of the wood without closing the pores and allows the natural process of seasoning to take place.

As solignum is non volatile it is unaffected by the sun's rays and, being insoluble in water, heavy rain will not wash it out, consequently it remains in the wood actively protecting the interior and exterior long after other so-called preservatives have disappeared.

**A BEAUTIFUL STAIN.** Solignum is also a high-class decorative stain for both indoor and outdoor woodwork, obtainable in BROWN or GREEN. It intensifies the natural grain of the wood and imparts an artistic and rich appearance to even the cheapest timber.

Solignum is cheaper than paint and can be easily applied by unskilled labour in about one-third of the time. THE SAVING IN COST IS THEREFORE CONSIDERABLE.

**COVERING CAPACITY.** Solignum can be applied by brush, spray gun or dipping. It has a covering capacity, when brush applied, of approximately 400 square feet per gallon on planed timber and 250 feet on rough sawn timber.

It is, however, false economy to use Solignum too sparingly as it should be borne in mind that the cost of Solignum is but a fraction of the value of the timber protected; it is, therefore, A VERY CHEAP INSURANCE.

**FINISH.** The natural finish of Solignum is dull or matt and unless desired, no further finish is necessary, but it will take wax or French polish quickly and easily when dry. Solignum can also be varnished or painted over when thoroughly dry, provided a coat (two coats if a light paint is required) of spirit varnish or shellac is first applied. If the Solignum has weathered outdoors for twelve months this special treatment is not necessary, unless a light paint is to be used.



Extract from letter received from Mr. A. L. BUTLER, Superintendant of Game Preservation, Sudan Government, Khartoum, re the above.

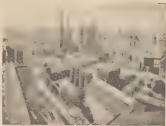
The peg on the right was treated with Solignum and buried in ground infested with White ants. It was dug up after 10 days and the ants were found to have died. The peg on the left was not treated and the ants were found to be alive and active. The photograph shows the difference in the result.

(Signed) A. L. BUTLER



### REMARKABLE PENETRATION

Wood block immersed in Solignum for ten minutes, and subsequently sawn, to show penetration.



Solignum is Manufactured at Dagenham and Hull  
GENERAL VIEW OF WORKS AT HULL

SOLE AGENTS:

**B. G. PLUMMER & CO.**

183 HAY STREET, SYDNEY, N.S.W.

TELEPHONE WA 4547

ESTABLISHED

1907



**HOT WATER  
SYSTEMS**

SECTION

**33**

SECTION

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CATALOGUES 1 to 6

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# The NEW Improved HOT Water Service

Prefabricated of highest-grade materials, the Barith Gas Storage Hot Water Service not only gives more hot water at lower cost

... it will operate trouble-free for a long life of efficient service.



No finer water heating unit has ever been offered to the Australian public. The patents covering Barith's exclusive features are the result of the combined experience of two leading water-heating specialists over the past twenty years.

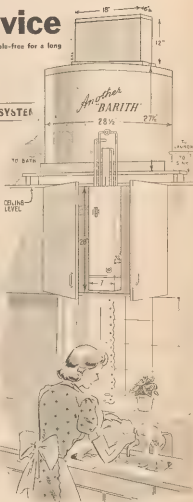
The Barith is a quality product, constructed for efficient, economical operation and long life

## FEATURES OF THE BARITH

1. No cold water enters hot storage tank.
2. Temperature control by thermostat.
3. No heat loss to main cold tank; and high thermal efficiency, ensures low running cost.
4. Should no water be drawn off for several days, the temperature is maintained by thermostat in main storage tank.
5. Safety cut-out in event of pilot failure.
6. Gas governor holds constant gas flow to heating unit.
7. As no cold water enters hot water storage tank, the insulation is not cooled, saving gas.

Prices and other details from your local Gas Company or Hardware merchant or direct from the address below.

An AVANT Product



Approved by the National Gas Assn. of Aust

AVANT ENGINEERING CO., 172 Berkley Street, Carlton, Vic.



## Specifications and Technical Data

The "Barith" Gas Hot Water Service consists of a Heater or Circulator, Hot Water Storage Tank, and Cold Water Feed Tank.

Hot storage and cold feed tanks are installed above ceiling level in roof cavity, and heating unit is fitted in a cupboard or other suitable location just below ceiling, adjacent to hot water storage tank. Flow and return pipes are carried from circulator through ceiling to hot tank.

Heater is constructed of 20 gauge H.R. copper heavily insulated, and, together with all pipes and connections, enclosed in an attractive steel casing finished in cream laquer.

Gas supply is thermostatically controlled, and burner is equipped with an automatic cut-off. Water heating capacity is approximately 4 gallons per hour at 150 deg Fahrenheit.

Hot water storage tank is of 30 gallons capacity. Constructed of H.R. copper, heavily insulated and enclosed in an outer casing with laquered finish.

Only hot water enters the storage tank and the thermostat is so arranged that the stored water is maintained at a constant temperature. Hot water is drawn from the bottom of storage tank, the outlet being of adequate capacity to provide a full flow at all taps simultaneously.

Gas is available at the same low rate throughout the whole 24 hours, and the Barith Hot Water Service with 30 gallons hot water storage tank, and its system of recovery as hot water is drawn off, is capable of economically providing over 30 gallons of water, if required, daily, at a temperature of 150 deg Fahrenheit.

## Installation Details

**Work to be performed by building contractor at the expense of builder or owner:—**

Provide and erect in roof cavity, wooden platform, 36 in. x 36 in., to support hot and cold water storage tanks.

Provide and instal in roof cavity, cold water point fitted with ½-inch stop cock, such cock to be within 12 inches of inlet to cold feed tank.

Provide and instal cold water supply piping to points for all cold taps.

Provide any channels or passages in walls, etc., necessary for installation of pipe lines

Carry out any patching or painting necessary in connection with the installation of hot water service.

**Work to be performed by hot water contractor:—**

Points to be connected to Hot Water Service: As specified by architect.

**Heating Unit:** To be installed in suitable position just below ceiling. As shown on drawings.

**Storage Tanks:** Hot storage tank and copper cold feed tank, together with galvanized overflow tray, to be fixed on platform in roof cavity provided by building contractor.

2-inch galvanized downpipe to be run from overflow tray and cold feed tank to suitable position for discharge.

**Cold Water Supply:** ½-inch copper tubing to be extended from stop cock provided by builder, and connected to cold feed tank.

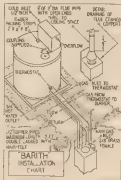
**Hot Water Supply:** ½ inch and ½-inch copper tubing to be extended as hot supply from hot water storage tank, above ceiling and down wall cavities or channels to points specified.

All hot water supply lines to be thoroughly lagged with felt. Any exposed piping or fittings, except in laundry, to be chromium plated.

**Gas Supply:** ½-inch black W.I. tubing to be extended from nearest suitable point in gas supply lines and connected to heating unit.

**Fittings:** "Easy Clean" Pattern—Chromium Plated. As specified by architect.

**Guarantee.**—The Hot Tank and Heating Unit is guaranteed against faulty workmanship and materials for a period of 12 months by the Avant Engineering Co.



This Hot Water Service is approved by The National Gas Association of Australia.

Look for this Badge of Approval.





# Hotpoint

## INSTANTANEOUS and STORAGE WATER HEATING SYSTEMS

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**2**


### HOTPOINT TYPE BB BATH HEATER

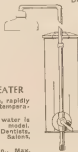
18 amps. per phase—Delivers about 2 gallons of water per minute.  
12 amps. per phase—Delivers 1½ gallons of water per minute.  
Available in 3 types: for bath only, for bath and shower, for bath, shower and hand basin.  
Dimensions: Height 14 in., Max. diameter, 5 in.

### HOTPOINT INSTANTANEOUS ELECTRIC WATER HEATERS

A.G.E. Hotpoint Electric Water Heaters give an immediate supply of hot water at minimum cost. Completely safe in operation, attractive in design, the Hotpoint harmonizes with any kitchen or bathroom setting.

It is reliably estimated that the AVERAGE operation cost is 1/4 per week for a family of five.

Hotpoint sw. tubes, brackets, shower fittings, elbows, 3-way sockets—anything that may be needed to install the Hotpoint Heater—are available.



Type SB



Type BB



Sink Heater

### HOTPOINT SINK HEATER

3 phase, 9 amps. per phase, rapidly delivers water at any temperature up to boiling.

Rating—12 amps. Flow of water is about half 3-phase model.  
Recommended for Dentists, Doctors, Hairdressing Salons, etc.

Dimensions: Height 12 in., Max. diameter 4 in.

## HOTPOINT STORAGE WATER HEATING SYSTEMS

The Hotpoint design is exceptionally robust with no complicated or delicate parts. The tank is always full, as the cold water enters below, forcing hot water out at the top. The heating unit is controlled by a

thermostat, adjustable between 100 deg. and 200 deg. F., which automatically disconnects the power when water reaches the desired temperature, making the service fully automatic.

### OPERATING DATA

Water boils at 212 deg. Fah. Water at 190 deg. Fah. is scalding. It would be difficult to wash dishes in water at 120 deg. Fah. A bath is too hot to enter at 105 deg. Fah.

Heater Capacity Gallons	Watts	Maximum Possible Cost per 30 Days. *See below.	Average Cost per 30 Days. *See below.	When mixed with cold water will give 65° per day:
25	1600	9/8	4/8	94 Gall. @ 150° F. 30 " " 140° F. 38 " " 130° F.
45	1800	12/9	6/-	88 " " 150° F. 94 " " 140° F. 75 " " 130° F.
60	2400	17/-	8/-	78 " " 150° F. 88 " " 140° F. 100 " " 130° F.
70	2800	19/9	9/-	33 " " 150° F. 100 " " 140° F. 118 " " 130° F.
85	3200	24	11/3	156 " " 150° F. 121 " " 140° F. 148 " " 130° F.
100	4000	27/6	13/3	138 " " 150° F. 142 " " 140° F. 166 " " 130° F.
120	4600	34/-	15/-	150 " " 150° F. 170 " " 140° F. 200 " " 130° F.
150	6000	41/3	20/-	167 " " 150° F. 214 " " 140° F. 256 " " 130° F.

\* These figures are based upon an "old tank" power rate of 2.5 pence per unit, water temperature 170 deg. F., and the assumption that full heater capacity is drawn every day.  
† These figures are based upon records of electricity accounts received from users of "Hotpoint" water heaters.



The Hotpoint Automatic Storage Unit comprises tank, thermostat, d.p.t. valve, electric element and thermostat.

### HEATER DETAILS

Heater Capacity Gallons	Diam.	Height Overall	Approx. Weight in Lbs. Empty, Full
25	26 1/2 in.	63 in.	180 270
45	31 in.	63 in.	190 290
60	35 in.	62 in.	210 310
70	33 in.	62 in.	240 340
85	35 in.	62 in.	260 360
100	38 in.	64 in.	300 350
120	38 in.	84 in.	320 350
150	42 in.	88 in.	380 420

## AUSTRALIAN GENERAL ELECTRIC PTY. LTD.

SYDNEY, NEWCASTLE, LISMORE, MELBOURNE, BRISBANE, ROCKHAMPTON, TOWNSVILLE, ADELAIDE, HOBART, LAUNCESTON. AGENTS IN W.A.: ATKINS (W.A.) LIMITED





## RHEEM AUSTRALIA PTY. LIMITED

SYDNEY . . . MELBOURNE . . . BRISBANE

SHEET METAL FABRICATORS . . . HOT DIP GALVANIZERS . . . PRESSWORK  
STEEL BARRELS . . . SHIPPING PACKAGES . . . STEEL DRUMS . . . DECORATED  
PAIS . . . UNDERGROUND STORAGE TANKS . . . HOME APPLIANCES

33

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### RHEEM 45-GALLON AUTOMATIC ELECTRIC STORAGE WATER HEATER

This information is compiled so that a quick review may be made of the features in this modern displacement type "Off-peak" Electric Storage Water Heater designed to satisfy the HOT WATER needs of the average medium-sized home.

Rheem mass precision assembly technique has made possible the production of a complete STORAGE WATER HEATING unit of rugged construction at low cost.

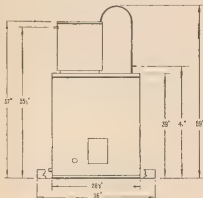
Simplicity of design, automatic thermostatically controlled operation with positive direct heating and high efficiency insulation mean carefree service at low operating cost.

Every Rheem unit is covered by written guarantee.

#### HOT WATER DELIVERY

When mixed with cold water, 45 gallons of Hot Water at 170 deg. F. gives	50 gallons at 160 deg. F
	56 " at 150 deg. F
	64 " at 140 deg. F
	75 " at 130 deg. F
	90 " at 120 deg. F
	113 " at 110 deg. F
	149 " at 100 deg. F

#### HEATER DIMENSIONS



#### OPERATING COST

Element Rating Watts	Maximum Poss. Cost 7 days	Average Normal Cost 7 days	Water Used
1800*	3/8	1/11	170°F.
2250†	3/8	1/11	170°F.

\* Sydney 10-hour heating period  
† Melbourne 9-hour heating period.

Costs are based on the special "Off-peak" night water heating tariff. Electricity supplied at .35 pence per Kilo-watt hour.

#### HEATER WEIGHTS

	Empty.	Full.
Heater . . . . .	170 lbs.	640 lbs.
Cistern . . . . .	22 lbs.	122 lbs.
Drip Tray . . . . .	14 lbs.	—
All Up Weight . . . . .	206 lbs.	776 lbs.
Packed size Heater and Cistern, 63 x 33 x 33.		
Packed weight Heater and Cistern, 308 lbs.		

## RHEEM 45-GALLON AUTOMATIC ELECTRIC STORAGE WATER HEATER

1. COLD WATER INLET AND SILENT TYPE BALL-VALVE eliminates noise of cistern filling, ball is of heavy gauge copper. Inlet size,  $\frac{1}{2}$  in. B.S.P.

2. 15-GALLON CISTERN ensures adequate supply to Heater. Built-in overflow outlet complete with down pipe to drip tray. Metal cover-plate.

3. HEAVY GAUGE OUTER CASING is beaded and crimped at top and bottom for strength. Top cover and base are flanged and fixed to case with self-tapping screws. Jacket top carries cistern guides.

4. HIGH EFFICIENCY GRANULATED SLAGWOOL INSULATION to a thickness of 3 inches is packed to a density of 10 lbs./cubic foot around entire storage cylinder.

5. STORAGE CYLINDER DRAIN POINT provides outlet from base of storage cylinder for cleaning when considered necessary.

6. DRIP TRAY in accordance with supply authority requirements is included as standard equipment.

7. HOT WATER EXHAUST PIPE returns water to cistern upon expansion during heating.

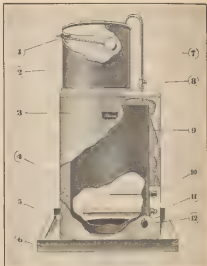
8. HOT WATER OUTLET from Heater provided point for connection of hot water supply pipes. Outlet size,  $\frac{1}{2}$  in. B.S.P.

9. COPPER HOT WATER STORAGE TANK is of 45 gallons capacity. Side seam and all connections are welded, top and bottom are locked double-seamed and soldered to body.

10. AUTOMATIC THERMOSTAT is fitted with finger-tip water temperature selector with temperature range from 50 deg. F. to 200 deg. F. Designed for 50 cycle A.C. supply at 230/250 volts (15 amp. maximum capacity).

11. SHEATHED BOBBIN HEATING ELEMENT provides direct immersion heating and permits element service without draining tank. 50 cycle A.C. supply at 220/240 volts, element rating—Sydney, 1800 watts; Melbourne, 2250 watts.

12. JUNCTION BOX FOR ELECTRICAL CONNECTION is provided and all wiring to this point is completed and tested.



### ARCHITECTS' SPECIFICATION

Allow the prime cost sum, listed elsewhere, for hot water installation, including the supply of a Rheem 45-gallon "Off-peak" Electric Storage Water Heater and provide for its installation on a suitable platform in the position indicated in the roof space.

Allow also for overflow pipe from drip tray supplied and discharging beyond the building where directed. Installation to provide for laying on hot water to bath, basin, shower, sink, and one tub in laundry.

Allow for laying on water and making the necessary electrical connections in accordance with the supply authority regulations.

NOTE: Complete installation instructions and specifications for the installing of Rheem Storage Water Heaters are available from the distributors.

Distributors for New South Wales—

**ALAN CROOK ELECTRICAL CO. PTY. LTD.**

Sydney, N.S.W. XF 1040

Distributors for Victoria—

**P. M. MONK PTY. LTD.**

Carlton, Victoria F 1285





## RHEEM AUSTRALIA PTY. LIMITED

SYDNEY . . . MELBOURNE . . . BRISBANE

SHEET METAL FABRICATORS . . . HOT DIP GALVANIZERS . . . PRESSWORK  
STEEL BARRELS . . . SHIPPING PACKAGES . . . STEEL DRUMS . . . DECORATED  
PAIS . . . UNDERGROUND STORAGE TANKS . . . HOME APPLIANCES

33

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### RHEEM AUTOMATIC GAS STORAGE WATER HEATERS

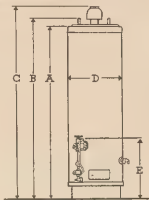


On the "floor" installation principle allows Rheem Gas Storage Water Heaters to be suitably located to reduce length of pipe runs, cutting installation costs.

Quick storage recovery ensures a plentiful supply of hot water, available instantly day or night

#### HEATER DIMENSIONS

Gallons Storage	A in.	B in.	C in.	D in.	E in.
15	50 $\frac{1}{2}$	53	58 $\frac{1}{2}$	15 $\frac{1}{2}$	15 $\frac{1}{2}$
20	60 $\frac{1}{2}$	63 $\frac{1}{2}$	74 $\frac{1}{2}$	15 $\frac{1}{2}$	16 $\frac{1}{2}$
35	62 $\frac{1}{2}$	65 $\frac{1}{2}$	70 $\frac{1}{2}$	19 $\frac{1}{2}$	18 $\frac{1}{2}$



Rheem Automatic Gas Storage Water Heaters are built entirely in the modern production plants of the Company in Sydney, Melbourne and Brisbane. Mass precision manufacturing technique and control permit Rheem to offer a precision unit at low costs and yet give more inbuilt features and quality.

Installation simplicity in new or existing premises is achieved by "one-unit" floor mounting occupying less than twenty inches square of floor space.

#### HEATER OPERATION DATA

Gallons Storage	Recovery Gals./Hr. Temp. Rise 80 deg. F.	Peak Delivery Hot Water 24 Hrs.	Burner Rating C. Ft. Hr.	Input BTU/Hr.	Approx. Weight Empty	Approx. Weight Packed
15	17.4	208	36.2	19,200	110	190
20	23.2	278	48.2	25,600	145	235
35	32.2	336	66.0	35,000	182	274

## RHEEM AUTOMATIC GAS STORAGE WATER HEATERS

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1. DRAUGHT DIVERTER of spun sheet metal, bright plated, prevents back draught passing down heating tube. Diverter outlet size, 3 inches.

2. HOT WATER OUTLET from top of storage cylinder for connection of hot supply lines projects through top of outer casing. Connection size,  $\frac{3}{4}$  in. B.S.P.

3. WATER HEATING AND STORAGE CYLINDER is hydrostatically tested during manufacture and has two further inspections prior to assembly. Of welded construction throughout with convex top and concave dished bottom.

4. HEAVY ZINCANEAL OUTER CASING is finished with high gloss washable lacquer, casing top and bottom are pressed zincaneal, flanged and fixed to body by self-tapping screws.

5. GRANULATED SLAG WOOL INSULATION is packed in annular space between outer casing and storage vessel to the density of 10 lbs. weight to each cubic foot, ensuring maximum heat conservation.

6. HEAT RAFFLE WITH ECONOMY RESTRICTER is suspended within heating tube and causes hot gases to take a circular path for maximum heat transfer.

7. HEATING TUBE passes from combustion chamber at base of storage cylinder through storage vessel and projects through top of outer casing to receive draught diverter. Heating tube is immersed in water for its full length.

8. COLD WATER INLET TUBE can be placed in either connection projecting through top of outer casing, but MUST be located in connection selected for cold water inlet, as this tube guides incoming cold water to base of storage cylinder, preventing mixing with stored hot water. Connection size,  $\frac{3}{4}$  in. B.S.P.

9. GAS GOVERNOR is of G.L.C. 100 D. type and stabilises gas flow irrespective of mains pressure variation. Connection size,  $\frac{1}{2}$  in. B.S.P.

10. FINGER-TIP TEMPERATURE CONTROL is located on automatic Grayson snap-action thermostat and permits selection of water heat for individual requirements.

11. AUTOMATIC TEMPERATURE CONTROL ROD is in direct contact with water in storage cylinder and measures heat of stored water controlling the water temperature to the heat selected.

12. PILOT AND SAFETY CONTROL provides automatic lighting of main burner flame and positively prevents the escape of unburnt gas should pilot flame be extinguished through any temporary failure of gas supply.

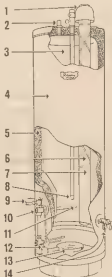
13. HIGH EFFICIENCY BURNER is of blue flame Bunsen type with venturi shaped mixing throat and primary air control shutter with locking screw. Gas injection nipple has built-in gas flow test point.

14. SLUDGE COCK permits occasional flushing of storage cylinder to remove impurities carried in by cold water supply and provides a handy point for drawing hot water into buckets, etc.

**ARCHITECTS' SPECIFICATION**  
Allow the prime cost sum listed elsewhere for hot water installation including the supply of a Rheem ..... gallon Automatic Gas Storage Water Heater and provide for its installation in the position indicated.

Installation to provide for laying on hot water to bath, basin, shower, sink, and tubs in laundry. All hot supply pipes to be insulated with hair felt to a thickness of  $\frac{1}{4}$  in., pipes exposed to weather to be insulated with an approved compound. Allow for laying on water and gas in accordance with the supply authority regulations.

**NOTE:** Complete installation instructions and specifications for the installing of Rheem Storage Water Heaters are available from the distributors.



DISTRIBUTORS

**COATES & CO. PTY. LTD.**

PITT STREET, SYDNEY. N3 4601.

QUEEN STREET, MELBOURNE. M 3541

ADELAIDE STREET, BRISBANE. B 3554





## ELECTRIC HOT WATER SYSTEMS

### FORCED CIRCULATION METHOD

#### EXCLUSIVE TO "EVERHOT"

The outstanding contractual feature of the EVERHOT is the improved forced circulation method. This method combines the circulator and stabiliser heaters of the earlier models. The circulator section delivers hot water speedily to the top of the cylinder, thus ensuring high

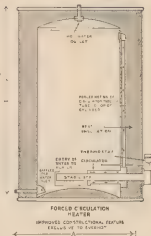
temperature hot water at the top. The stabiliser section stabilises the temperature of the water and is the means of supplying high temperature hot water throughout the day and late at night. The improved forced circulation heater is patented and is exclusive to the EVERHOT.

#### EXPERT ADVISORY SERVICE FOR ARCHITECTS

A hot water specialist is always available to discuss problems in relation to electric water heating. King MX 3287 and an expert will call.

#### COUNTRY INSTALLATIONS.

Where pressure from water mains is not available, the hot water cylinder may be installed on floor level or below the floor. When ordering, state height of tank above proposed position of cylinder.



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Recommended Storage and Heating Elements sizes, together with Guaranteed Running Costs at new reduced rates for Water Heating by Electricity at 0.35d. (Melbourne) and 0.45d. (Country) per unit.

Number of Persons	Size of Hot Water Storage Cylinder	Range of High Heating Elements According to Requirements	Quantities of Hot Water Supply as desired at average Temperature of Approximately 130° F.	Melbourne Suburban 0.35d. per unit.	Per. All Areas, Frankston, Gippsland District, Werribee 0.45d. per unit.	Dimensions*
						A B
TWO	40 gallons	1 h.w. 20 gallons daily	20 gallons daily	3d. 6d. 5	3d. 6d. 5	2' 0" 2' 0"
		2 h.w. 40 gallons daily	40 gallons daily	6d. 12d. 10	6d. 12d. 10	2' 0" 2' 0"
THREE	60 gallons	1 h.w. 30 gallons daily	30 gallons daily	4d. 8d. 6	4d. 8d. 6	2' 6" 2' 6"
		2 h.w. 60 gallons daily	60 gallons daily	8d. 16d. 12	8d. 16d. 12	2' 6" 2' 6"
FOUR	80 gallons	1 h.w. 40 gallons daily	40 gallons daily	5d. 10d. 8	5d. 10d. 8	3' 0" 3' 0"
		2 h.w. 80 gallons daily	80 gallons daily	10d. 20d. 16	10d. 20d. 16	3' 0" 3' 0"
FIVE	100 gallons	1 h.w. 50 gallons daily	50 gallons daily	6d. 12d. 10	6d. 12d. 10	3' 6" 3' 6"
		2 h.w. 100 gallons daily	100 gallons daily	12d. 24d. 20	12d. 24d. 20	3' 6" 3' 6"
SIX	120 gallons	1 h.w. 60 gallons daily	60 gallons daily	7d. 14d. 12	7d. 14d. 12	4' 0" 4' 0"
		2 h.w. 120 gallons daily	120 gallons daily	14d. 28d. 24	14d. 28d. 24	4' 0" 4' 0"
EIGHT	160 gallons	1 h.w. 80 gallons daily	80 gallons daily	9d. 18d. 16	9d. 18d. 16	4' 6" 4' 6"
		2 h.w. 160 gallons daily	160 gallons daily	18d. 36d. 32	18d. 36d. 32	4' 6" 4' 6"

\*Alternative Dimensions: Where the space available will not permit the installation of the standard size unit a smaller size unit may be constructed to suit.

### ARCHITECTS' SPECIFICATIONS

#### HOT WATER SYSTEM

The Contractor will arrange with the Manufacturers to supply and install ..... (where shown on drawings) or (where directed) ..... (state size in gallons) insulated "EVERHOT" Electric Hot Water storage cylinder complete with thermostat; also provide a cold water levelling tank and all necessary run of 3 in. copper piping to ..... (B.O.B. above, etc.) and gas pipe to all other points—all piping to be well insulated with hair felt; terminate all points with 1 in. pattern caps, marked "Hot" and "Cold;" and do all other work as specified to efficiently complete the installation as a whole. Piping to be concealed where possible and, placed where exposed to view.

#### CARPENTER

Provide ..... (where shown on drawings) or (where directed) suitable timber stands to accommodate hot water levelling tank.

#### PLUMBER

Take 1 in. cold water supply pipe to cold water levelling tank for electric hot water system in roof and connect thereto. Provide stop tap 8 ft. 0 in. from ground level.

#### ELECTRICIAN

Carry out electrical installation for Hot Water System in accordance with the regulations of ..... (state Authority) wiring to night heating element of ..... (state heating element shown on table opposite) as recommended) and supply and install "Throw-over" Switch of suitable size.

Over 20,000 "EVERHOT SYSTEMS," in Use.

Specialists in Electric Water Heating for over a quarter of a century.

### DRAFFIN BROS. PTY. LTD.

45 CITY ROAD, SOUTH MELBOURNE

Telephone: MX 5801

Also Consult

THE ELECTRIC LIGHT & POWER SUPPLY CORP. LTD., 15 CASTLEREAGH ST., SYDNEY

REMARKS & CATALOGUE



LIGHTHOUSE BRAND  
(Registered Trade Mark)

# PYROX

## INSTANTANEOUS MULTI-TAP GAS WATER HEATERS

TYPES NA25Z and NA32Z

Entirely Made in Australia



LIGHTHOUSE BRAND  
(Registered Trade Mark)

*100 per cent. Safe, Economical in Operation, Elegant Appearance*

PYROX HEATERS, first released for sale in 1940, have maintained their reputation for safety and economical operation. Thousands are now operating perfectly in every Australian State. Made from the highest grade local raw materials by Australian precision engineers under the supervision of experts, they are thoroughly tested before receiving the approval badge of the National Gas Association.

Pyrox Heaters work automatically. When the hot water tap is turned on at the bath, shower, sink, or basin, a stream of hot water flows immediately, continually and uninterruptedly. Closing the hot water tap shuts off the gas supply to the heater.

Ingenious safety devices prevent the escape of unburnt gas, fires, or explosions.

The white, vitreous enamelled shell and the attractive shape make the heaters harmonize with the artistic modern home.

### PYROX 1946 MODELS.

The principal construction features of the 1940 type heater have been retained.

A water-operated main gas valve ensures gradual and gentle lighting without popping, and quick extinction of the burner flames, when the water is turned off. Down-draught is prevented and perfect combustion is ensured by a down-draught diverter.



Gas and water strainers keep out impurities.

A governor is provided to keep the gas supply to the burner constant in spite of pressure fluctuations in the gas main. The following important improvements in design are embodied in the 1946 models, as a result of the ceaseless research work by Pyrox engineers and scientists.

Application has been made for a patent to protect the new governor, which is now also supplied as an independent unit. It is of unique design and incorporates the gas strainer which prevents impurities from entering the governor or the gas switch.

The water strainer has been considerably enlarged and made easily accessible.

A dual-action gas control handle now takes the place of the two levers formerly provided. This single handle simplifies the gas switch operation. When the control lever is turned half on to the "pilot" position marked on the front

shell, the pilot is ready to be lit. When it is pushed completely over to the right, the full gas supply is made available. The burner flames will then light automatically immediately the water is turned on. They are automatically extinguished with the closing of the hot water tap.

Other design changes serve the same purpose, viz., to simplify the working of the heater, to make its operation still more economical, and to facilitate servicing.

### Recapitulation of Main Advantages of Pyrox Instantaneous Heaters Types NA25Z and NA32Z

1. No possible damage through carelessness, ignorance or confusion.
2. No escape of unburnt gas.
3. No condensation or green drip.
4. Pressure-proof construction and water-operated main gas valve prevent damage to the heater.
5. Low purchase price.
6. High thermal efficiency, resulting in small gas consumption.
7. Easy installation.
8. Easy and inexpensive maintenance.
9. No storage—hence no heat losses and continuity of supply of fresh hot water.
10. Twelve months' guarantee of workmanship and material.

## PYROX LIMITED

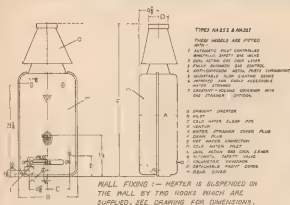
Corner Queensberry & Drummond Streets  
MELBOURNE, N.3  
Telephone: F 9121

18-20 Albion Street  
SYDNEY  
Telephone: M 2271

RAMSAY & CO. LTD.

# PYROX GAS WATER HEATERS—TYPES NA257 and NA32Z

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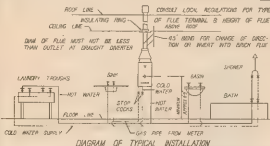
FOR CONNECTING THE GAS STOP COCK TO GOVERNOR A  $\frac{3}{8}$  BARREL UNION WITH NIPPLE MUST BE USED. THIS IS TO BE PROVIDED BY CONTRACTOR.

PVT.	DIMENSIONS (Inches)					
NETT	WITH THE EXCEPTIONS OF THESE DIMENSIONS ARE ON DRAWING					
1.55	A	B	C	D	E	F
NA257	4.6	9.8	14.8	4.8	4.8	5.8
NA32Z	5.0	9.8	15.8	4.8	4.8	5.8

## INSTALLATION NOTES:

RECOMMENDED LOCATION OF HEATERS, IN A WELL VENTILATED ROOMS AS CLOSE AS POSSIBLE TO THE POINT WHERE HOT WATER IS REQUIRED MUST BE PROMINENTLY GENERAL IN THE ROOM. HEATERS DO NOT PERMIT THE INSTALLATION OF CONDENSING LOGS MULTIPoint HEATERS IN BATH ROOMS.

IF INSTALLED IN CUPBOARD SPACE FRONT OF CUPBOARD SHOULD BE WELL VENTILATED WITH LOUVER OR GRILLE HAVING AT LEAST HALF OPENING. FLYWHEELS SHOULD NOT BE USED AS THIS BE COME CUMBERBUT WITH DUST DRAWN IN WHILE HEATER IS IN OPERATION. TOP OF CUPBOARD SHOULD BE CLOSED IN LEAVING ONLY SUFFICIENT SPACE FOR FLUE GASES. ATTING RING TO PASS THROUGH. HEATERS AT BOTTOM OF CUPBOARD SHOULD AT LEAST TWO THE AREA OF OPENING IN FRONT.



TYPE OF HEATER	CAPACITY GALS. RASSED FROM 50° TO 100° F/MIN.	CONSUMPTION OF GAS/MIN.		DIAM. OF CONNECTING PIPES (IN.)				DIAM. OF GAS PIPES (IN.)			
		USUAL	MAX. 15.5 PSI	GAS	FLUE	COLD WATER	HOT WATER	UP TO 15 PSI	UP TO 30 PSI	UP TO 35 PSI	UP TO 45 PSI
NA257	2	2.6 C.F.T.	2.4 C.F.T.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$
NA32Z	2 $\frac{1}{2}$	3 C.F.T.	2.8 C.F.T.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$

\* ACCORDING TO PIPE LENGTH FROM METER. CALCULATED ON FLOW PRESSURE OF 25.0/100". IF PRESSURE IS HIGHER, SMALLER DIAMETER PIPES CAN BE USED.

## SPECIFICATIONS Covering the Installation of PYROX Instantaneous Gas Water Heater

### HEATER

Where shown on drawing (or as directed) provide and install a Pyrox.....(auto type).....automatic gas water heater in accordance with the manufacturer's or distributor's directions.

### GAS SUPPLY

From the meter extend the gas supply in an adequate diameter pipe (consult gas authorities). Provide full bore gas stop cock of approved design adjacent to heater, connected by a brass barrel union to heater, in such a way as to facilitate removal of heater for service if necessary.

### FLUE

Provide and fix to heater an asbestos flue pipe of correct diameter, and extend same through ceiling joists to open air and terminate with an approved flue terminal. Flue to be flashed at point of penetration of roof with sheet lead, to be clamped to asbestos flue pipe with approved collar clips, all

oints to be sealed with an approved type of waterproof plastic sealing material.

### COLD WATER SUPPLY.

Extend a  $\frac{1}{2}$  in. G.W.I. pipe from nearest water supply to heater and provide 1 in. tested stop cock adjacent to heater.

### HOT WATER SUPPLY.

Connect hot water to various points with  $\frac{1}{2}$  inch gauge solid hard-drawn copper tubing, connected with approved brass compression fittings. All exposed copper pipe to be lagged with good quality hair felt bound on with wire.

### FITTINGS

All copper pipe where necessary to be exposed to be chromium-plated and carried on face of wall with approved chromium-plated pillar clips. (Specify fittings to be used at bath, basin, kitchen sink, laundry, shower, toilet, etc.)

—RANBY'S CATALOGUE

# GARDNER & NAYLOR PTY. LTD.

Specialists in Hot Water, Heating and Air Conditioning Systems

Head Office and Works:

Cor. KAVANAGH and IRELAND STREETS, SOUTH MELBOURNE, S.C.4

Telephone: MX2268 (3 lines)

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6

## HOT WATER SYSTEMS—ELECTRIC

### Electric Systems

The "GARNAY" Electric Unit is an engineering job manufactured by a firm of long standing in the engineering field, whose experience covers a wide range of hot water systems from the large industrial installations to the smaller domestic type. It is designed for a 2 1/2 to 10 year life service. Twenty-five years experience is behind each unit.

**Construction**—The storage unit is a copper-clad job constructed of heavy copper with all joints brazed welded. Top and bottom are planked and dished for extra strength. Cold supply tank is also fabricated at copper.

The unit will withstand a pressure many times its working pressure and has an ample safety margin.

**Insulation**—The unit is insulated with 4 in. granulated cork, which allows the stored water to remain hot for long periods.

**Casing**—The outer casing is of sheet steel. See animal finish.

**Electric Element**, which is the vital part of the unit, being of low watt density, has been designed for a long

### Dimensions of standard "Garnay" Electric Hot Water Storage Units

No. of units	Exp. daily	Diameter		Electrical Loading
		Outside	Overall Height	
3	50	2' 4"	3' 9"	2.25 KW
4	60	2' 6"	3' 9"	3 KW
6	80	2' 10"	3' 9"	4.5 KW
8	100	2' 9"	4' 9"	6 KW
11	120	3' 0"	4' 9"	6 KW
14	150	3' 3"	4' 9"	8 KW

**Large Capacity Units**—"Garnay" Electric Units can be supplied in capacities up to 1,000 gallons and for a wide range of working pressures.

life of efficient operation. It is fitted in a copper sheath easily inserted or removed from outside the unit.

**Thermostat**—The temperature of the water is controlled by an adjustable thermostat which may be set for any temperature desired.

**Reliability**—By avoiding complex working parts in its manufacture, the "Garnay" unit will give trouble-free operation for a long period of years.

### ELECTRIC TOWEL AND CLOTHES DRYING RAILS

An outstanding electrical development. (Patented)

Set the seal on home comfort and convenience by installing the new and improved "Garnay" towel and clothes drying rail unit which can be installed irrespective of the type of hot water system installed. Hitherto it has not been possible to have heated towel rails with the electric hot water system. Oil type towel rails are heated by hot water circulation in fuel systems. Electrical loading only 125 watts.

## HOT WATER SYSTEMS—SOLID AND OIL FUEL

### Solid Fuel

#### THE VICTOR COMBINATION BOILER

The modern "Victor" Boiler is the last word in fuel hot water boilers suitable for residential, country and general work, and incorporates features not found in any other boiler.

It is of unique design, being a combined boiler and hot water storage cylinder in one compact unit. This design brings the following advantages—

- Saves space—one compact unit—no separate cylinder required
- Saves fuel—direct heat transfer to stored water which surrounds firebox—but further conserved by efficient insulation
- Greater efficiency—extra heating surface obtained from flue which passes through water storage
- Quick heating—because of increased efficiency the "Victor" heats up very quickly
- Attractive appearance—clean lines pipe connections reduced to minimum

The "Victor" is constructed of copper, the firebox being fabricated of copper plate approximately 1/4 in. thick. The outer casing covering the insulation is of sheet steel with baked enamel finish. SPECIAL COLOURS CAN BE ARRANGED.

#### EASE OF OPERATION

Features built into the "Victor" enable this boiler to be operated with the minimum of time and effort. Loading and filling are easy and removable ash pan greatly simplifies boiler operation.

#### CAPACITIES

The "Victor" is manufactured in 50, 80, 100 and 150 gallon capacities.

#### STEAM HEATED CALORIFIER

KAVANAGH'S CATALOGUE



### VICTOR COMBINATION BOILER

For Coke, Briquettes and Wood Fuel.

### "BOSK" BOILER

This boiler is designed for operating in conjunction with a hot water storage cylinder or tank, and is especially suitable for improving existing hot water systems and for country installations.

#### COUNTRY INSTALLATIONS.

Designed for burning wood fuel, our boilers are very suitable for country installations in farms, station properties, dairies, etc., and have been giving satisfactory service for 25 years in all parts of Victoria and the Riverina.

### Oil Fired Hot Water Systems

The modern oil burner is a very efficient unit when incorporated in boilers designed especially for oil firing. The unit is fully automatic—no attention being required.

With this system combined hot water and heating installations have proved most successful because of the effective control possible. Oil fuel is stored in underground tanks of 300 to 500 gallons capacity. Oil fill lines are connected to the street underground, where oil company's wagons connect for filling oil tanks.

#### ADVANTAGES OF OIL FIRING—

- No attention required
- No handling of fuel
- No ash
- Quick heating

**HIGH PRESSURE SYSTEMS.** Connected directly to the town's mains using pressure units tested to 350 lbs. per sq. inch. With these systems the pressure at the hot 150 equals that at the cold end, making it possible to install high pressure mixing showers.



**BOILERS and  
RADIATORS**

SECTION  
**34**  
SECTION

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CATALOGUES 1 to 4

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# THE RADIATOR COMPANY PTY. LTD.

Box 4643, G.P.O., Sydney

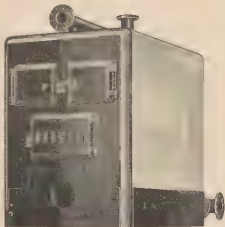
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## RADCO

### SECTIONAL BOILERS

For Steam and Hot Water Central Heating and Indirect Hot Water Supply with all Fuels



RADCO SECTIONAL BOILERS are made in five grate widths covering a range 150,000 to 2,500,000 Btu per hr

They are built of pressed-steel plates, welded into rugged, crack proof, Coda-built sections, joined by carefully spaced headstuds to make positive leak-proof connections. Short tie bolts cut section time and take expansion with less strain. Ample grate area ensures less frequent attention, less clinker, easier control and steadier output.

Large scientifically proportioned furnaces ensure complete combustion and prevent loss of valuable gases. Deep rebuffs simplify the installation of automatic firing devices.

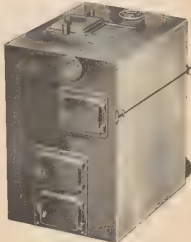
It's the only sectional heating boiler on the local market having facilities for internal cleaning and in practice is built for 24 lbs. per sq. inch working steam pressure, and water pressure up to 45 lbs. per sq. inch.

Trim steel jackets carrying thick insulatable insulation cut heat loss to minimum and fit neatly in place after the heating connections have been completed.



## GRAVISTOKE

### Automatic Magazine Feed Boilers



### GRAVISTOKE Automatic Magazine Feed Boilers

are of sectional construction for Central Heating and Indirect Hot Water Supply to flats, hotels, hospitals, etc.

It's possible to save an average of 40 per cent. of fuel costs with a GRAVISTOKE and electric automatic controls. Fuel feeds by gravity to a sloping grate on which it forms a constant regulated bed—the first contribution to high efficiency. No raw fuel is ever dumped on an incandescent fire, and so no volatile gases escape unburnt.

GRAVISTOKE Boilers are Code built for heavy dependable service. They're conservatively rated and may be easily installed in batteries to satisfy almost any heating demand. They're graded for the best fuel for these boilers.

## GRAVISTOKE "FIFTEEN"

is a firebox type boiler designed for low cost, economical Central Heating and Hot Water Supply for flats, hotels, hospitals, nurseries, brooders, etc. It carries a 24 hours' storage of coke or briquette fuel, has a Central Heating output of 55,000 Btu per hour, and 120,000 Btu. per hour for Hot Water Supply.

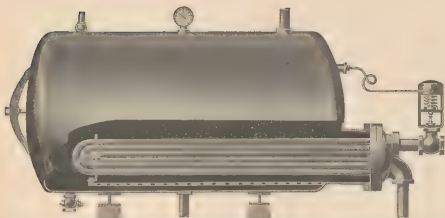
Where service water supply is corrosive the boiler is supplied with a built-in copper water heating coil, ensuring permanently rustless tap supply.

Smokeless combustion, easy control, less labour, economy of space, no moving parts, solid crack-proof construction, silence, complete safety, and many other advantages are yours with a GRAVISTOKE.

Charge the magazine and remove clinker and daily clean the burn once a week. That's all. Easy, isn't it?

# Athens

## STORAGE CALORIFIERS



**A. E. ATHERTON & SONS PTY. LTD.**  
381-383 LATROBE STREET, MELBOURNE, VICTORIA  
**ATHERTONS (N.S.W.) PTY. LTD.**  
COULSON STREET, ERSKINEVILLE, NEW SOUTH WALES

# ATHENA STORAGE CALORIFIERS

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## INTRODUCTION

*This Bulletin has been prepared as an Engineering Standard to assist Owners, Architects and Engineers in selecting the correct size and type of Storage Calorifier.*

### APPLICATION

The "ATHENA" Calorifier is ideally suited for use in any installation where hot water is required at irregular intervals. It is especially designed so that the water can be heated over a long period and ample storage capacity ensures a supply of hot water at any time without producing a peak demand or overload on the boilers or other steam supply.

The success of this "ATHENA" method of heating water has been proven by its universal adoption by architects and engineers as the most practical and economical means of supplying hot water for hotels, laundries, flats, schools, and other applications where quantities of hot water are required.

### OPERATION

The "ATHENA" Calorifier consists of a tubular heating element installed in a storage tank filled with water. Steam is passed through the inside of the tubes, raising the temperature of the water in the calorifier and maintaining it at the required temperature by means of a regulating valve which automatically controls the steam supply. Exhaust steam from pumps and other auxiliaries or live steam from the boilers can be used for heating.

### STANDARDIZATION

The advantages of a standardized piece of equipment are well known to the architect, engineer, distributor and user. These advantages are simple specifications, interchangeability of

parts, and the ultimate saving in cost as the result of mass production of a limited number of standard units as contrasted to the high cost and special construction of countless sizes of custom built units. The standardization of calorifiers is equally as important as the standardization of valves, fittings, pipe, and many other products which

result in tremendous savings as well as the production of a superior product.

In order to standardize and simplify the selection of the proper size and type of calorifier, and in keeping with the present-day trend to eliminate useless duplication, we have selected a group of sizes and pressure classifications for the "ATHENA" Calorifier that adequately covers all requirements. This makes it possible to select a standard unit to meet any operating condition.

Incorporated in this group are the latest improvements in design and construction.

### SPECIFIC PLACES FOR USING "ATHENA" STORAGE CALORIFIERS

HOTELS  
FLATS  
SCHOOLS  
CLUB BUILDINGS  
DOORMITORIES  
PUBLIC  
BUILDINGS  
HOSPITALS

LAUNDRIES  
OFFICE  
BUILDINGS  
PUBLIC BATHS  
LARGE  
RESIDENCES  
INDUSTRIAL  
PLANTS

Any place where quantities of hot water are required and exhaust or live steam is available

"Athena"  
Storage  
Calorifiers



Practical  
Economical  
Reliable

ATHENA

## SHELLS

All "ATHENA" Calorifiers are designed with a shell plate and head thickness in accordance with the S.A.A. Boiler Code for Unfired Pressure Vessels.

## HEATING ELEMENTS

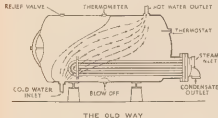
The "ATHENA" heating elements are constructed of heavy gauge copper tubing bent into a U-bend shape to provide for the expansion of the tubes in service. Tubes are securely rolled into tube sheets and held in place by heavy support plates to prevent vibration and wear. Steam bonnets are of heavy design, accurately machined, and there are no internal gaskets or joints to leak or give trouble.

The amount of heating surface recommended for any capacity is ample and based on laboratory and field tests. The "ATHENA" Distributor makes every part of the heating surface effective, thereby reducing the total square feet of heating surface required when compared to the amount required with the customary design for the same service where much of the surface is ineffective.

This Distributor is a metal channel so designed that the incoming cold water is evenly distributed along the entire length of the heating element. All of the incoming cold water must thus come in contact with the steam-heated surface of the heating element. There can be no short circuiting. All of the heating element surface is effectively utilized to produce hot water.

## PROVISION FOR WITHDRAWING ELEMENT

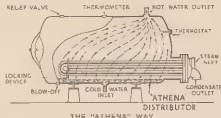
The upper part of the "ATHENA" Distributor also serves as a rail or slide for the easy removal of the heating element. When the heating element is in place it is firmly anchored to the Distributor by means of a locking device. This locking device is a special feature of "ATHENA" Calorifiers and is so arranged that the heating element can be removed without the necessity of removing the manhole cover or entering the calorifier. When being removed, the heating element slides easily on the guide rails and greatly facilitates and lessens the time required for cleaning and inspection.



THE OLD WAY

## THE "ATHENA" DISTRIBUTOR

The greatest problem in the design of any storage calorifier is to provide for a steady flow of hot water from the calorifier when there is a heavy draw on the hot water system. Often with a heavy draw on the calorifier the water is removed at such a rapid rate that the cold water entering the calorifier short circuits or bypasses the heating element without any appreciable rise in temperature. It mixes with the outgoing hot water, thereby lowering considerably the temperature of the water going to the hot water system. To solve this problem the "ATHENA" engineers have developed the "ATHENA" Distributor.



THE "ATHENA" WAY

## CRADLES

Movable undrilled steel supporting cradles are furnished with all "ATHENA" Calorifiers. These are designed to distribute the weight of the calorifier evenly when filled with water. Standard cradles are furnished undrilled, but special cradles drilled to accommodate customer's anchor supports or pipe legs can be furnished at a slight additional cost.

## OPENINGS

To standardize the connections of all storage calorifiers all openings are furnished sufficiently large to meet any condition. Reducing companion flanges or bushings can be furnished to match customer's piping.

# ATHENA STORAGE CALORIFIERS

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## TYPE "C.C." - CUSILMAN BRONZE



### "ATHENA" WELDED CUSILMAN BRONZE CALORIFIERS

#### TYPE "C.C."

"ATHENA" welded Cusilman bronze calorifiers, type "C.C.", are furnished in all standard sizes as listed on page 5, in both the 35 lb. and 75 lb. class. They are especially recommended for use where the water at all times must be absolutely clean and where local conditions make steel calorifiers unsuitable on account of corrosion. Cusilman bronze has the strength of steel and all the corrosion resistant properties of pure copper.

#### SHELL

Material—Cusilman bronze, an alloy of copper, silicon and manganese. The thickness of the shell and heads is calculated in accordance with the S.A.A. formulae for unfired pressure vessels.

Welding—Electric fusion welded seams of the butt welded type.

Openings—Standard 11 in. x 15 in. manhole and connections as listed in Table 1.

#### HEATING ELEMENT

Capacity and Rating—See Tables, pages 8 and 9.

Construction and Dimensions—See Table 2, page 7.

#### CRADLES

Material—Welded steel undrilled and movable. Dimensions—See Table 1.

#### FINISH

The natural Cusilman bronze finish.

#### TYPICAL SPECIFICATION

Storage calorifiers shall have shells constructed of Cusilman (copper, silicon, manganese alloy) with welded seams. Shell and head thickness shall be calculated by the formulae of the S.A.A. Code for Unfired Pressure Vessels and designed for a working pressure of.....(35-75) pounds per square inch. Shells shall be.....in. dia. by.....in. long with a storage capacity of.....gallons.

Heating element shall contain.....sq. ft. of heating surface made up of 1 in. 16 gauge copper U-bend tubing and have a capacity of heating.....gallons per hour of water from.....deg. F. to.....deg. F. with steam at.....pounds per square inch gauge.

All storage calorifiers shall be provided with a distributor to evenly distribute the incoming water over the entire heating surface. Suitable steel supporting cradles, manhole in head, and guide rail for removing heating element shall be provided.

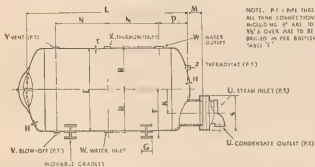
Storage calorifiers shall be of the "ATHENA C.C." type or equal and dimensions and openings shall be in accordance with those shown on page 5, bulletin A.S.C. 45.1, issued by A. E. Atherton & Sons Pty. Ltd., 381-383 Latrobe Street, Melbourne, Victoria, or Athertons (N.S.W.) Pty. Ltd., Coulson Street, Erskineville, New South Wales.

# TYPE "C.C." - CUSILMAN BRONZE

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## CAPACITIES - DIMENSIONS



NOTE: P.P. PIPE THREAD  
ALL TANK CONNECTIONS UP TO AND  
INCLUDING 2" ARE TO BE PIPE T-HEADS,  
3/4" & OVER ARE TO BE FLANGED AND  
DRILLED AS PER BRITISH STANDARD  
TABLE 1.

TABLE 1

S.No	Cylindrical Capacity cu. ft.	Length Feet	Cylindrical Diameter Inches	WORKING PRESSURE					DIMENSIONS AND CONNECTIONS Inches	ELEMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
				35 lb. per sq. in. class (70 lb. per sq. in. test)		70 lb. per sq. in. class (140 lb. per sq. in. test)		Weight, lbs.		No. of Flanges	No. of Stays	Weight, lbs.	No. A				No. B				No. C				No. D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
				Thickness of Shell Inches	Thickness of Flange Inches	P	G						J	N	P	R	V	W	X	Y	Z	K	M	S	U	K	M	S	U	K	M	S	U																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
CC-1	100	24	60	34	12	230	1	1/2	330	16 1/2	4	14	20	5	13	1	1 1/2	1	1	1 1/2	22	25	25	2	6 1/2	5	13 1/2	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Although the thicknesses shown in bold face type above for sizes CC-1 to CC-5 inclusively comply with the S.A.A. code for the 35 lb. per sq. in. class, the selection of the corresponding thicknesses for the 75 lb. per sq. in. class is recommended.

NOTE: Manways only supplied to order

# ATHENA STORAGE CALORIFIERS

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## HEATING ELEMENTS

### "ATHENA" TYPE C.C. HEATING ELEMENTS



Type "C.C." "ATHENA" tubular heating elements are furnished in a number of sizes to fit the standard "ATHENA" Storage Calorifiers.

In addition to being furnished with all types of "ATHENA" storage calorifiers, "ATHENA" heating elements can be furnished separately for installation in existing tanks. When purchased separately, heating elements can be furnished with or without the element nozzle for attachment to the calorifier.

#### HEATING CAPACITY

The customary standard of rating heating elements for storage calorifiers is on the basis of gallons per hour of water heated from 40 deg. F. to 180 deg. F., with steam at atmospheric pressure as shown in Table No. 2. For other inlet and outlet water temperatures and different steam pressures use the heating capacity tables shown on pages 8 and 9.

#### CONNECTIONS

The sizes of the connections shown in Table 2 are standard and sufficiently large to meet any condition. Reducing bushings can be furnished to match the customer's piping.

#### TYPICAL SPECIFICATION FOR ELEMENT PURCHASED ALONE

Heating element shall contain.....sq. ft. of heating surface made up of 1 in. 16 B.W.G. copper U-bend tubing and have a capacity of heating.....gallons per hour of water from.....deg. F. to.....deg. F. with steam at.....pounds per square inch. Tube sheets shall be of.....Muntz metal; steam bonnet shall be of.....cast bronze, designed for a working pressure of 150 lbs. per square inch and of the "ATHENA" type "C.C." size....., or equal. Dimensions and connections shall be in accordance with those shown on page 7, bulletin A.S.C. 45.1, issued by A. E. Atherton & Sons Pty. Ltd., 381-383 Latrobe Street, Melbourne, Victoria, or Athertons (N.S.W.) Pty. Ltd., Cecilston Street, Erskineville, New South Wales.

#### MATERIALS

PART	TYPE "C.C."
Tube Sheets	Muntz Metal
Tube Support Plates	Muntz Metal
Tube Material	Copper
Tube Size	1" 16 B.W.G.
Steam Bonnets	Cast Bronze
Element Nozzle	Welded Cushman Bronze



# STORAGE ELEMENTS ATHENA

## HEATING ELEMENTS

### CAPACITIES - DIMENSIONS

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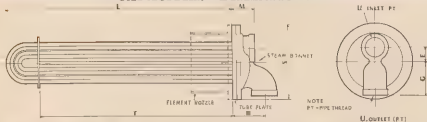


TABLE 2

Size	Element Length Inches	Element Diameter Inches	Tube Diameter Inches	Tube Length Inches	Tube Plate Length Inches	Tube Plate Width Inches	Tube Plate Height Inches	Tube Plate Thickness Inches	Tube Plate Material	Tube Plate Weight Lbs.	Tube Plate Area Sq. Ft.	Tube Plate Volume Cu. Ft.	Tube Plate Weight Lbs.	Tube Plate Area Sq. Ft.	Tube Plate Volume Cu. Ft.
A 2	30	1 1/2	24	2	2	2	2	2	2	2	2	2	2	2	2
B 1	45	2 1/2	42	2	2	2	2	2	2	2	2	2	2	2	2
C 1	60	3 1/2	60	2	2	2	2	2	2	2	2	2	2	2	2
D 1	75	4 1/2	78	2	2	2	2	2	2	2	2	2	2	2	2
E 1	90	5 1/2	96	2	2	2	2	2	2	2	2	2	2	2	2
F 1	105	6 1/2	112	2	2	2	2	2	2	2	2	2	2	2	2
G 1	120	7 1/2	128	2	2	2	2	2	2	2	2	2	2	2	2
H 1	135	8 1/2	144	2	2	2	2	2	2	2	2	2	2	2	2
I 1	150	9 1/2	160	2	2	2	2	2	2	2	2	2	2	2	2
J 1	165	10 1/2	176	2	2	2	2	2	2	2	2	2	2	2	2
K 1	180	11 1/2	192	2	2	2	2	2	2	2	2	2	2	2	2
L 1	195	12 1/2	208	2	2	2	2	2	2	2	2	2	2	2	2
M 1	210	13 1/2	224	2	2	2	2	2	2	2	2	2	2	2	2
N 1	225	14 1/2	240	2	2	2	2	2	2	2	2	2	2	2	2
O 1	240	15 1/2	256	2	2	2	2	2	2	2	2	2	2	2	2
P 1	255	16 1/2	272	2	2	2	2	2	2	2	2	2	2	2	2
Q 1	270	17 1/2	288	2	2	2	2	2	2	2	2	2	2	2	2
R 1	285	18 1/2	304	2	2	2	2	2	2	2	2	2	2	2	2
S 1	300	19 1/2	320	2	2	2	2	2	2	2	2	2	2	2	2
T 1	315	20 1/2	336	2	2	2	2	2	2	2	2	2	2	2	2
U 1	330	21 1/2	352	2	2	2	2	2	2	2	2	2	2	2	2
V 1	345	22 1/2	368	2	2	2	2	2	2	2	2	2	2	2	2
W 1	360	23 1/2	384	2	2	2	2	2	2	2	2	2	2	2	2
X 1	375	24 1/2	400	2	2	2	2	2	2	2	2	2	2	2	2
Y 1	390	25 1/2	416	2	2	2	2	2	2	2	2	2	2	2	2
Z 1	405	26 1/2	432	2	2	2	2	2	2	2	2	2	2	2	2

### "ATHENA" ELEMENT NOZZLE



TABLE 4

Size	Element Length Inches	Element Diameter Inches	Tube Diameter Inches	Tube Length Inches	Tube Plate Length Inches	Tube Plate Width Inches	Tube Plate Height Inches	Tube Plate Thickness Inches	Tube Plate Material	Tube Plate Weight Lbs.	Tube Plate Area Sq. Ft.	Tube Plate Volume Cu. Ft.	Tube Plate Weight Lbs.	Tube Plate Area Sq. Ft.	Tube Plate Volume Cu. Ft.
A 2	30	1 1/2	24	2	2	2	2	2	2	2	2	2	2	2	2
B 1	45	2 1/2	42	2	2	2	2	2	2	2	2	2	2	2	2
C 1	60	3 1/2	60	2	2	2	2	2	2	2	2	2	2	2	2
D 1	75	4 1/2	78	2	2	2	2	2	2	2	2	2	2	2	2
E 1	90	5 1/2	96	2	2	2	2	2	2	2	2	2	2	2	2
F 1	105	6 1/2	112	2	2	2	2	2	2	2	2	2	2	2	2
G 1	120	7 1/2	128	2	2	2	2	2	2	2	2	2	2	2	2
H 1	135	8 1/2	144	2	2	2	2	2	2	2	2	2	2	2	2
I 1	150	9 1/2	160	2	2	2	2	2	2	2	2	2	2	2	2
J 1	165	10 1/2	176	2	2	2	2	2	2	2	2	2	2	2	2
K 1	180	11 1/2	192	2	2	2	2	2	2	2	2	2	2	2	2
L 1	195	12 1/2	208	2	2	2	2	2	2	2	2	2	2	2	2
M 1	210	13 1/2	224	2	2	2	2	2	2	2	2	2	2	2	2
N 1	225	14 1/2	240	2	2	2	2	2	2	2	2	2	2	2	2
O 1	240	15 1/2	256	2	2	2	2	2	2	2	2	2	2	2	2
P 1	255	16 1/2	272	2	2	2	2	2	2	2	2	2	2	2	2
Q 1	270	17 1/2	288	2	2	2	2	2	2	2	2	2	2	2	2
R 1	285	18 1/2	304	2	2	2	2	2	2	2	2	2	2	2	2
S 1	300	19 1/2	320	2	2	2	2	2	2	2	2	2	2	2	2
T 1	315	20 1/2	336	2	2	2	2	2	2	2	2	2	2	2	2
U 1	330	21 1/2	352	2	2	2	2	2	2	2	2	2	2	2	2
V 1	345	22 1/2	368	2	2	2	2	2	2	2	2	2	2	2	2
W 1	360	23 1/2	384	2	2	2	2	2	2	2	2	2	2	2	2
X 1	375	24 1/2	400	2	2	2	2	2	2	2	2	2	2	2	2
Y 1	390	25 1/2	416	2	2	2	2	2	2	2	2	2	2	2	2
Z 1	405	26 1/2	432	2	2	2	2	2	2	2	2	2	2	2	2

## HEATING ELEMENTS

## CONVERSION TABLES TO DETERMINE HEATING CAPACITY OF "ATHENA" HEATING ELEMENTS

The following tables give a simple and easy method of calculating the required amount of heating surface with different steam pressures and for varying water inlet and outlet temperatures.

The tables are rated on the basis of gallons of water heated per hour for each sq. ft. of heating surface. For example, To determine the amount of heating surface required to heat 1,000 gallons per hour of water from 50° F. to 130° F. with steam at 10 lb. gauge pressure.

From the table for 10 lb. steam pressure under column inlet temperature 50° opposite outlet temperature of 130° F. —one sq. ft. of heating surface will heat 62.2 gallons of water per hour.

Dividing 1,000 gallons per hour by 62.2 gives a total of 16.1 sq. ft. of heating surface required.

From page 7, table 2, select a size B-6 heating element which has 27 sq. ft. of heating surface and a length of 72 inches.

If the storage calorifier is 72 inches long, the B 6 heating element is the proper one to use for the above conditions. If the storage calorifier is less than 72 inches, a size C 4 heating element which has 33 sq. ft. of heating surface and is 48 inches long is the correct selection.

STEAM PRESSURE 0 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	65.4	79.2	92	117.5	170	328.1
110°	53.2	60.5	70.2	84.9	105.7	156.7
120°	44.7	49.5	56	64.8	77.5	98.2
130°	37.7	41.3	45.4	51	58.7	70.4
140°	32.2	34.5	37.5	41.4	46.2	53
150°	27.4	29.2	31.2	33.9	37	41.4
160°	23.4	24.7	26.2	27.9	30.1	32.7
170°	19.9	20.7	21.4	22	24.5	26.2
180°	16.7	17.4	17.9	18.8	19.5	21
190°	13.6	14	14.5	15	15.6	16.4
200°	10.5	10.8	11	11.3	11.7	12.1

STEAM PRESSURE 2 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	73.7	85.9	104	134	192	376
110°	60.5	68.5	79.5	96.9	123.5	180
120°	50.2	56.2	63.2	73.3	88.3	112.6
130°	43	46.9	51.7	59.2	67.5	89.9
140°	38.8	42	45.9	47.2	53.1	61.2
150°	31.5	33.7	36	39.1	43	48.1
160°	27.2	28.6	30.3	32.5	35.1	38.5
170°	23.8	24.4	25.6	27.1	28.9	31.1
180°	19.8	20.5	21.4	22.5	23.7	25.3
190°	16.6	17.1	17.7	18.3	19.3	20.2
200°	13.5	13.9	14.2	14.6	15.1	15.6

STEAM PRESSURE 5 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	77.5	90.2	109	141.7	206	390
110°	63.9	73	84.5	102.4	132	201
120°	53.4	59.6	67.5	78.5	95	121.3
130°	45.5	49.7	55.2	63.1	72.4	87.2
140°	39.2	42.5	46.1	51	57.1	66.8
150°	33.6	36	39	42	46.4	52
160°	29.1	30.9	32.9	35.4	38.2	43
170°	25.2	26.5	27.8	29.6	31.8	34.2
180°	21.6	22.6	23.6	24.9	26.4	28.2
190°	18.4	19.2	19.9	20.7	21.8	23
200°	15.5	16	16.5	17.1	17.8	18.5

STEAM PRESSURE 10 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	98	114.1	139.5	189	264	503
110°	81	92.8	107.5	125.5	159	242
120°	68.3	76	86.3	99.5	121	156.8
130°	57.4	62.2	70	79.8	92.2	112
140°	51.6	54	60	68.3	74	85.8
150°	43.7	46.7	50.2	54.8	60.5	68.3
160°	38.2	40.2	43	46.4	50.2	55.2
170°	33.1	34.9	37	39.2	42	45.5
180°	29	30.3	31.6	33.5	35.3	37.6
190°	25.2	26.1	27.2	28.4	29.8	31.3
200°	21.6	22.1	23	24	25	26.2
210°	18.5	18.7	19.3	19.9	20.7	21.5

STEAM PRESSURE 15 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	114	128.8	147.1	181.5	276	540
110°	86.2	97.5	113.5	130.8	180	257
120°	72.5	81	92.6	107.2	129.8	169.5
130°	62.7	68.2	76.2	86.2	100	120.9
140°	54.2	58.5	64.9	74.6	84	93.3
150°	47.1	50.4	54.8	63.8	69.9	74
160°	41.4	43.7	46.7	50.7	55	60.6
170°	36.1	38	40.4	43	46.4	50.7
180°	31.7	33.2	35	36.7	39.4	42.9
190°	27.8	29	30.2	31.8	33.5	35.5
200°	24.2	25.4	26.1	27.2	28.6	30
210°	21	21.6	22.3	23.1	24.1	25.1

STEAM PRESSURE 20 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	90°
100°	110.4	127.5	156.5	185	258	575
110°	91	102.9	119.2	140.7	181.5	277
120°	76.5	85.8	97.9	113.5	137	175.1
130°	67	72.8	80.4	91	106.4	129.5
140°	57.5	62	67.9	75.5	85.5	97
150°	50.2	53.7	58	63.1	70.7	80
160°	43.8	46.8	49.8	54.1	59	65.2
170°	38.9	41	43.8	46.2	49.8	54.5
180°	34.2	35.8	37.4	40	42.6	46
190°	30.3	31.5	32.7	34.5	36.6	39
200°	26.7	27	28.6	30	31.5	33.1
210°	23.4	24.1	24.9	25.8	27	28.6

# HEATING ELEMENTS

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STEAM PRESSURE 25 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	136.0	152.7	185.9	242	353.4	686.7
110°	109.7	131.5	143.9	177	230.0	322.4
120°	92	109	116.2	137	167.5	213
130°	79	87.8	90.4	107.7	128.8	156
140°	69.9	74.0	81.7	90.7	111.9	111.3
150°	60.3	64.5	70	77.2	85	96.5
160°	53.3	56.5	63.4	65.7	71.5	79.4
170°	45.2	48.7	53.5	56.2	60.9	66.5
180°	41.7	43.7	46.2	48.9	52.2	56.2
190°	37	38.7	40.4	42.5	45	46
200°	32	34	35.4	37.2	39	41.2
210°	28.9	30	31.0	32.3	33.7	35.2

STEAM PRESSURE 30 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	126	156.9	193.4	235	366.7	723.4
110°	111.9	144	150.5	182.5	240.8	323.4
120°	96.5	106.7	121.7	135.6	173.4	225
130°	82	87.1	101	114.2	153.3	182
140°	71.5	75	85	95	125.2	155.7
150°	62.9	67.5	72.4	80.5	89.3	104.4
160°	55.7	59.4	63.4	68.9	75.4	81.5
170°	47	52.2	55.4	59.5	64.2	70
180°	43.9	46.2	48.9	51.7	55.4	59.7
190°	39	40.7	43	45.3	47.9	51
200°	34.9	36.5	37.7	39.5	41.5	44.2
210°	31.4	31.9	33.2	34.7	36.2	37.5

STEAM PRESSURE 40 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	144.1	167.5	205	270	353.4	788.4
110°	120.5	136.7	159.4	193.4	255	373.4
120°	102.2	114	136	152.7	185.7	241.7
130°	88.2	97	107.5	122.7	154	176.7
140°	77	84.2	92	102.2	116.4	136.7
150°	68	73	79.7	86.2	97.2	109.5
160°	60	64	68.7	74.5	77.7	81.4
170°	53.5	56.5	60	64.4	70	75.7
180°	47.9	50.2	53.4	56.5	60.5	65.7
190°	42.7	44.9	46.9	49.5	52.7	56.5
200°	38.2	39.9	41.7	43.7	46	48.9
210°	34.4	35.5	37	38.5	40.4	42.5

STEAM PRESSURE 50 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	152.7	180	220	286.7	420	803
110°	129.2	144	167.5	210	270	393.4
120°	107.5	121.7	136.7	162	196.7	255
130°	90.5	101.9	114	130	162.7	185.7
140°	81.9	88.7	97	109.7	124.2	134
150°	72.4	77.5	84.2	92.7	104	117.7
160°	64	68	74.4	80	87.5	97
170°	57	60.4	64.4	69.4	75.4	82.5
180°	51	54	57	60.7	65	70.9
190°	46	48	50.5	53.7	57	60.9
200°	41.2	43	45	47.4	49.9	53.4
210°	37.2	38.7	40.2	41.9	44.2	46.4

STEAM PRESSURE 60 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	156.7	185.7	225	291.7	425	851.4
110°	131.7	150.4	179.3	220	286.7	420
120°	111.7	128.4	144	167.5	210	270
130°	97	107.5	120	136.7	161.7	191.7
140°	85	92	101.9	114	130	154.7
150°	75.4	80.9	88.0	97.2	108.7	121.2
160°	67.5	71.5	77.2	84.2	92.2	102.9
170°	60	63.4	68.2	73	78.9	87.5
180°	53.9	57	60.2	64.4	68.9	74.5
190°	48.5	50.7	53.5	57	60.4	64.7
200°	43.9	46.2	47.9	50.5	53.4	56.5
210°	39.5	41.7	43	44.9	47.2	50

STEAM PRESSURE 80 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	167.5	196.7	241	315	461	906.4
110°	140.4	161.9	190	230	305	450
120°	121.7	135	155	184.2	220	286.7
130°	105	117.5	134	158.4	171	191
140°	92	101.9	114	130	146.2	167.5
150°	81.9	88.7	97	109.7	124.2	134
160°	72.4	77.5	84.2	92.7	104	117.7
170°	64	68	74.4	80	87.5	97
180°	57	60.4	64.4	69.4	75.4	82.5
190°	51	54	57	60.7	65	70.9
200°	46	48	50.5	53.7	57	60.9
210°	41.2	43	45	47.4	49.9	53.4

STEAM PRESSURE 100 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	180	210	255	353.4	490	1021.7
110°	140	170	201.7	244.2	326.7	473.4
120°	128	144	162	185.7	235	305
130°	123	127.7	136.7	152.7	185.7	235
140°	107.9	106.7	117.7	131.7	150	179.2
150°	96.7	94.2	102.2	113	127	144
160°	87.5	85	97.7	107.5	120	136.7
170°	80.7	74.5	79.4	85.9	92.5	102.2
180°	72.9	67.1	70.5	75.9	81.5	87.2
190°	67	60	63.4	67.5	71.9	77
200°	62	54.4	56.9	60.4	64	68.2
210°	57.4	49.4	51.7	54	57	60.4

STEAM PRESSURE 125 LBS. GAUGE

Outlet Temp.	Inlet Temperature					
	40°	50°	60°	70°	80°	100°
100°	186.7	220	280	353.4	520	1050
110°	156.9	180	210	301.7	440	820
120°	136.7	152.9	172.4	201.7	285	387.7
130°	118.5	130	143	167.5	183.4	241.7
140°	103.9	114.2	126.2	140.4	161.9	191
150°	92.7	100.4	109.7	120	135	164.4
160°	83	88.7	95.5	104	118.2	130
170°	74.4	79	85	91.5	100.4	109.5
180°	67.5	71.5	74.2	80.9	87.5	95.7
190°	61.4	64.4	68.4	72.4	77.5	84.2
200°	56.2	58.7	61.7	65	69.4	73
210°	51	54.4	56.7	59.7	61.9	65

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# ATHENA STORAGE CALORIFIERS

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## HOT WATER QUANTITIES

### HOT WATER REQUIRED FOR FIXTURES FOR VARIOUS TYPES OF BUILDING

Maximum Gallons of Hot Water per Hour per Fixture

TYPE OF BUILDING

FIXTURE	Hotel	Club	Residence	Hospital	Hotel	Industrial Plant	Office Building	Private Residence	School	Y.M.C.A.
Basins { Private Lavatory	2	2	2	2	2	2	2	2	2	2
Basins { Public Lavatory	3	5	6	5	6	10	5	—	12	6
Baths	16	16	25	14	16	5	—	16	—	25
Dishwashers	12	40-125	—	40-125	40-150	30-100	—	12	30-100	30-100
Foot Basins	2	2	10	2	2	10	—	2	2	10
Kitchen Sink	8	16	—	16	16	16	—	8	8	16
Laundry { Stationary Tubs	16	20	—	20	20	—	—	16	—	20
Pantry Sink	4	8	—	8	8	—	—	4	8	8
Showers	60	125	180	60	60	120	—	60	180	180
Slop Sink	16	16	—	16	25	16	12	12	16	16
Hourly Heating Capacity Factor	30%	30%	40%	25%	25%	40%	30%	30%	40%	40%
Storage Capacity Factor	125%	90%	100%	80%	80%	100%	200%	70%	100%	100%

The above table indicates the quantity of hot water at 140 deg. which it is customary to allow for various fixtures in different types of buildings. These quantities have been compiled on the basis of maximum demand and in the bottom two lines of the table are shown the average heating capacity and storage capacity that should be provided.

Typical example:—A flat with the following fixtures and steam available at atmospheric pressure

60 Lavatories . . . . .	at 2	120
30 Bath Tubs . . . . .	at 16	480
30 Showers . . . . .	at 60	= 1800
60 Kitchen Sinks . . . . .	at 8	= 480
16 Laundry Tubs . . . . .	at 16	240

Maximum hourly requirements . . . . . = 3120  
 Hourly heating capacity =  $3120 \times 0.30 = 936$  gallons per hour.  
 Storage capacity  $936 \times 1.25 = 1170$  gallons.

Select an "ATHENA" size 16 storage calorifier, 1090 gallons storage capacity, equipped with an "ATHENA" size C-7 heating element which, from Table No. 2, page No. 7, is capable of heating 1090 gallons per hour of water from 40 deg. F. to 180 deg. F. with steam at 6 lbs. gauge pressure.

"Athena"  
Storage  
Calorifiers



Practical  
Economical  
Reliable



# IDEAL BOILERS AND RADIATORS



No. 5 D Domestic Boiler

## IDEAL DOMESTIC BOILERS FOR HOT WATER SUPPLY

Composed entirely of direct heating surface, ensuring a maximum transmission of heat to water giving a high efficiency with very small fuel consumption. Rated conservatively and will easily maintain full capacity without forcing fire. Maximum heating surface and hot water output. Available in 12 sizes. BOWER BARPFED (Rustless) ensuring pure water supply.

No.	Capacity		Hot Water Supply		Height		Clearance	
	Water	Per	at 100	at 100	at 100	at 100	at 100	at 100
	Gals.	Hr.	at 100	at 100	at 100	at 100	at 100	at 100
30	1.1	2.00	70.0	70.0	22	22	22	22
40	1.5	2.85	98.0	98.0	24	24	24	24
50	2.0	3.80	130.0	130.0	26	26	26	26
60	2.5	4.75	160.0	160.0	28	28	28	28
70	3.0	5.70	190.0	190.0	30	30	30	30
80	3.5	6.65	220.0	220.0	32	32	32	32
90	4.0	7.60	250.0	250.0	34	34	34	34
100	4.5	8.55	280.0	280.0	36	36	36	36
110	5.0	9.50	310.0	310.0	38	38	38	38
120	5.5	10.45	340.0	340.0	40	40	40	40

\*Heating Surface (sq. ft.) in No. 30 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 98, 102, 106, 110, 114, 118, 122, 126, 130, 134, 138, 142, 146, 150, 154, 158, 162, 166, 170, 174, 178, 182, 186, 190, 194, 198, 202, 206, 210, 214, 218, 222, 226, 230, 234, 238, 242, 246, 250, 254, 258, 262, 266, 270, 274, 278, 282, 286, 290, 294, 298, 302, 306, 310, 314, 318, 322, 326, 330, 334, 338, 342, 346, 350, 354, 358, 362, 366, 370, 374, 378, 382, 386, 390, 394, 398, 402, 406, 410, 414, 418, 422, 426, 430, 434, 438, 442, 446, 450, 454, 458, 462, 466, 470, 474, 478, 482, 486, 490, 494, 498, 502, 506, 510, 514, 518, 522, 526, 530, 534, 538, 542, 546, 550, 554, 558, 562, 566, 570, 574, 578, 582, 586, 590, 594, 598, 602, 606, 610, 614, 618, 622, 626, 630, 634, 638, 642, 646, 650, 654, 658, 662, 666, 670, 674, 678, 682, 686, 690, 694, 698, 702, 706, 710, 714, 718, 722, 726, 730, 734, 738, 742, 746, 750, 754, 758, 762, 766, 770, 774, 778, 782, 786, 790, 794, 798, 802, 806, 810, 814, 818, 822, 826, 830, 834, 838, 842, 846, 850, 854, 858, 862, 866, 870, 874, 878, 882, 886, 890, 894, 898, 902, 906, 910, 914, 918, 922, 926, 930, 934, 938, 942, 946, 950, 954, 958, 962, 966, 970, 974, 978, 982, 986, 990, 994, 998, 1002, 1006, 1010, 1014, 1018, 1022, 1026, 1030, 1034, 1038, 1042, 1046, 1050, 1054, 1058, 1062, 1066, 1070, 1074, 1078, 1082, 1086, 1090, 1094, 1098, 1102, 1106, 1110, 1114, 1118, 1122, 1126, 1130, 1134, 1138, 1142, 1146, 1150, 1154, 1158, 1162, 1166, 1170, 1174, 1178, 1182, 1186, 1190, 1194, 1198, 1202, 1206, 1210, 1214, 1218, 1222, 1226, 1230, 1234, 1238, 1242, 1246, 1250, 1254, 1258, 1262, 1266, 1270, 1274, 1278, 1282, 1286, 1290, 1294, 1298, 1302, 1306, 1310, 1314, 1318, 1322, 1326, 1330, 1334, 1338, 1342, 1346, 1350, 1354, 1358, 1362, 1366, 1370, 1374, 1378, 1382, 1386, 1390, 1394, 1398, 1402, 1406, 1410, 1414, 1418, 1422, 1426, 1430, 1434, 1438, 1442, 1446, 1450, 1454, 1458, 1462, 1466, 1470, 1474, 1478, 1482, 1486, 1490, 1494, 1498, 1502, 1506, 1510, 1514, 1518, 1522, 1526, 1530, 1534, 1538, 1542, 1546, 1550, 1554, 1558, 1562, 1566, 1570, 1574, 1578, 1582, 1586, 1590, 1594, 1598, 1602, 1606, 1610, 1614, 1618, 1622, 1626, 1630, 1634, 1638, 1642, 1646, 1650, 1654, 1658, 1662, 1666, 1670, 1674, 1678, 1682, 1686, 1690, 1694, 1698, 1702, 1706, 1710, 1714, 1718, 1722, 1726, 1730, 1734, 1738, 1742, 1746, 1750, 1754, 1758, 1762, 1766, 1770, 1774, 1778, 1782, 1786, 1790, 1794, 1798, 1802, 1806, 1810, 1814, 1818, 1822, 1826, 1830, 1834, 1838, 1842, 1846, 1850, 1854, 1858, 1862, 1866, 1870, 1874, 1878, 1882, 1886, 1890, 1894, 1898, 1902, 1906, 1910, 1914, 1918, 1922, 1926, 1930, 1934, 1938, 1942, 1946, 1950, 1954, 1958, 1962, 1966, 1970, 1974, 1978, 1982, 1986, 1990, 1994, 1998, 2002, 2006, 2010, 2014, 2018, 2022, 2026, 2030, 2034, 2038, 2042, 2046, 2050, 2054, 2058, 2062, 2066, 2070, 2074, 2078, 2082, 2086, 2090, 2094, 2098, 2102, 2106, 2110, 2114, 2118, 2122, 2126, 2130, 2134, 2138, 2142, 2146, 2150, 2154, 2158, 2162, 2166, 2170, 2174, 2178, 2182, 2186, 2190, 2194, 2198, 2202, 2206, 2210, 2214, 2218, 2222, 2226, 2230, 2234, 2238, 2242, 2246, 2250, 2254, 2258, 2262, 2266, 2270, 2274, 2278, 2282, 2286, 2290, 2294, 2298, 2302, 2306, 2310, 2314, 2318, 2322, 2326, 2330, 2334, 2338, 2342, 2346, 2350, 2354, 2358, 2362, 2366, 2370, 2374, 2378, 2382, 2386, 2390, 2394, 2398, 2402, 2406, 2410, 2414, 2418, 2422, 2426, 2430, 2434, 2438, 2442, 2446, 2450, 2454, 2458, 2462, 2466, 2470, 2474, 2478, 2482, 2486, 2490, 2494, 2498, 2502, 2506, 2510, 2514, 2518, 2522, 2526, 2530, 2534, 2538, 2542, 2546, 2550, 2554, 2558, 2562, 2566, 2570, 2574, 2578, 2582, 2586, 2590, 2594, 2598, 2602, 2606, 2610, 2614, 2618, 2622, 2626, 2630, 2634, 2638, 2642, 2646, 2650, 2654, 2658, 2662, 2666, 2670, 2674, 2678, 2682, 2686, 2690, 2694, 2698, 2702, 2706, 2710, 2714, 2718, 2722, 2726, 2730, 2734, 2738, 2742, 2746, 2750, 2754, 2758, 2762, 2766, 2770, 2774, 2778, 2782, 2786, 2790, 2794, 2798, 2802, 2806, 2810, 2814, 2818, 2822, 2826, 2830, 2834, 2838, 2842, 2846, 2850, 2854, 2858, 2862, 2866, 2870, 2874, 2878, 2882, 2886, 2890, 2894, 2898, 2902, 2906, 2910, 2914, 2918, 2922, 2926, 2930, 2934, 2938, 2942, 2946, 2950, 2954, 2958, 2962, 2966, 2970, 2974, 2978, 2982, 2986, 2990, 2994, 2998, 3002, 3006, 3010, 3014, 3018, 3022, 3026, 3030, 3034, 3038, 3042, 3046, 3050, 3054, 3058, 3062, 3066, 3070, 3074, 3078, 3082, 3086, 3090, 3094, 3098, 3102, 3106, 3110, 3114, 3118, 3122, 3126, 3130, 3134, 3138, 3142, 3146, 3150, 3154, 3158, 3162, 3166, 3170, 3174, 3178, 3182, 3186, 3190, 3194, 3198, 3202, 3206, 3210, 3214, 3218, 3222, 3226, 3230, 3234, 3238, 3242, 3246, 3250, 3254, 3258, 3262, 3266, 3270, 3274, 3278, 3282, 3286, 3290, 3294, 3298, 3302, 3306, 3310, 3314, 3318, 3322, 3326, 3330, 3334, 3338, 3342, 3346, 3350, 3354, 3358, 3362, 3366, 3370, 3374, 3378, 3382, 3386, 3390, 3394, 3398, 3402, 3406, 3410, 3414, 3418, 3422, 3426, 3430, 3434, 3438, 3442, 3446, 3450, 3454, 3458, 3462, 3466, 3470, 3474, 3478, 3482, 3486, 3490, 3494, 3498, 3502, 3506, 3510, 3514, 3518, 3522, 3526, 3530, 3534, 3538, 3542, 3546, 3550, 3554, 3558, 3562, 3566, 3570, 3574, 3578, 3582, 3586, 3590, 3594, 3598, 3602, 3606, 3610, 3614, 3618, 3622, 3626, 3630, 3634, 3638, 3642, 3646, 3650, 3654, 3658, 3662, 3666, 3670, 3674, 3678, 3682, 3686, 3690, 3694, 3698, 3702, 3706, 3710, 3714, 3718, 3722, 3726, 3730, 3734, 3738, 3742, 3746, 3750, 3754, 3758, 3762, 3766, 3770, 3774, 3778, 3782, 3786, 3790, 3794, 3798, 3802, 3806, 3810, 3814, 3818, 3822, 3826, 3830, 3834, 3838, 3842, 3846, 3850, 3854, 3858, 3862, 3866, 3870, 3874, 3878, 3882, 3886, 3890, 3894, 3898, 3902, 3906, 3910, 3914, 3918, 3922, 3926, 3930, 3934, 3938, 3942, 3946, 3950, 3954, 3958, 3962, 3966, 3970, 3974, 3978, 3982, 3986, 3990, 3994, 3998, 4002, 4006, 4010, 4014, 4018, 4022, 4026, 4030, 4034, 4038, 4042, 4046, 4050, 4054, 4058, 4062, 4066, 4070, 4074, 4078, 4082, 4086, 4090, 4094, 4098, 4102, 4106, 4110, 4114, 4118, 4122, 4126, 4130, 4134, 4138, 4142, 4146, 4150, 4154, 4158, 4162, 4166, 4170, 4174, 4178, 4182, 4186, 4190, 4194, 4198, 4202, 4206, 4210, 4214, 4218, 4222, 4226, 4230, 4234, 4238, 4242, 4246, 4250, 4254, 4258, 4262, 4266, 4270, 4274, 4278, 4282, 4286, 4290, 4294, 4298, 4302, 4306, 4310, 4314, 4318, 4322, 4326, 4330, 4334, 4338, 4342, 4346, 4350, 4354, 4358, 4362, 4366, 4370, 4374, 4378, 4382, 4386, 4390, 4394, 4398, 4402, 4406, 4410, 4414, 4418, 4422, 4426, 4430, 4434, 4438, 4442, 4446, 4450, 4454, 4458, 4462, 4466, 4470, 4474, 4478, 4482, 4486, 4490, 4494, 4498, 4502, 4506, 4510, 4514, 4518, 4522, 4526, 4530, 4534, 4538, 4542, 4546, 4550, 4554, 4558, 4562, 4566, 4570, 4574, 4578, 4582, 4586, 4590, 4594, 4598, 4602, 4606, 4610, 4614, 4618, 4622, 4626, 4630, 4634, 4638, 4642, 4646, 4650, 4654, 4658, 4662, 4666, 4670, 4674, 4678, 4682, 4686, 4690, 4694, 4698, 4702, 4706, 4710, 4714, 4718, 4722, 4726, 4730, 4734, 4738, 4742, 4746, 4750, 4754, 4758, 4762, 4766, 4770, 4774, 4778, 4782, 4786, 4790, 4794, 4798, 4802, 4806, 4810, 4814, 4818, 4822, 4826, 4830, 4834, 4838, 4842, 4846, 4850, 4854, 4858, 4862, 4866, 4870, 4874, 4878, 4882, 4886, 4890, 4894, 4898, 4902, 4906, 4910, 4914, 4918, 4922, 4926, 4930, 4934, 4938, 4942, 4946, 4950, 4954, 4958, 4962, 4966, 4970, 4974, 4978, 4982, 4986, 4990, 4994, 4998, 5002, 5006, 5010, 5014, 5018, 5022, 5026, 5030, 5034, 5038, 5042, 5046, 5050, 5054, 5058, 5062, 5066, 5070, 5074, 5078, 5082, 5086, 5090, 5094, 5098, 5102, 5106, 5110, 5114, 5118, 5122, 5126, 5130, 5134, 5138, 5142, 5146, 5150, 5154, 5158, 5162, 5166, 5170, 5174, 5178, 5182, 5186, 5190, 5194, 5198, 5202, 5206, 5210, 5214, 5218, 5222, 5226, 5230, 5234, 5238, 5242, 5246, 5250, 5254, 5258, 5262, 5266, 5270, 5274, 5278, 5282, 5286, 5290, 5294, 5298, 5302, 5306, 5310, 5314, 5318, 5322, 5326, 5330, 5334, 5338, 5342, 5346, 5350, 5354, 5358, 5362, 5366, 5370, 5374, 5378, 5382, 5386, 5390, 5394, 5398, 5402, 5406, 5410, 5414, 5418, 5422, 5426, 5430, 5434, 5438, 5442, 5446, 5450, 5454, 5458, 5462, 5466, 5470, 5474, 5478, 5482, 5486, 5490, 5494, 5498, 5502, 5506, 5510, 5514, 5518, 5522, 5526, 5530, 5534, 5538, 5542, 5546, 5550, 5554, 5558, 5562, 5566, 5570, 5574, 5578, 5582, 5586, 5590, 5594, 5598, 5602, 5606, 5610, 5614, 5618, 5622, 5626, 5630, 5634, 5638, 5642, 5646, 5650, 5654, 5658, 5662, 5666, 5670, 5674, 5678, 5682, 5686, 5690, 5694, 5698, 5702, 5706, 5710, 5714, 5718, 5722, 5726, 5730, 5734, 5738, 5742, 5746, 5750, 5754, 5758, 5762, 5766, 5770, 5774, 5778, 5782, 5786, 5790, 5794, 5798, 5802, 5806, 5810, 5814, 5818, 5822, 5826, 5830, 5834, 5838, 5842, 5846, 5850, 5854, 5858, 5862, 5866, 5870, 5874, 5878, 5882, 5886, 5890, 5894, 5898, 5902, 5906, 5910, 5914, 5918, 5922, 5926, 5930, 5934, 5938, 5942, 5946, 5950, 5954, 5958, 5962, 5966, 5970, 5974, 5978, 5982, 5986, 5990, 5994, 5998, 6002, 6006, 6010, 6014, 6018, 6022, 6026, 6030, 6034, 6038, 6042, 6046, 6050, 6054, 6058, 6062, 6066, 6070, 6074, 6078, 6082, 6086, 6090, 6094, 6098, 6102, 6106, 6110, 6114, 6118, 6122, 6126, 6130, 6134, 6138, 6142, 6146, 6150, 6154, 6158, 6162, 6166, 6170, 6174, 6178, 6182, 6186, 6190, 6194, 6198, 6202, 6206, 6210, 6214, 6218, 6222, 6226, 6230, 6234, 6238, 6242, 6246, 6250, 6254, 6258, 6262, 6266, 6270, 6274, 6278, 6282, 6286, 6290, 6294, 6298, 6302, 6306, 6310, 6314, 6318, 6322, 6326, 6330, 6334, 6338, 6342, 6346, 6350, 6354, 6358, 6362, 6366, 6370, 6374, 6378, 6382, 6386, 6390, 6394, 6398, 6402, 6406, 6410, 6414, 6418, 6422, 6426, 6430, 6434, 6438, 6442, 6446, 6450, 6454, 6458, 6462, 6466, 6470, 6474, 6478, 6482, 6486, 6490, 6494, 6498, 6502, 6506, 6510, 6514, 6518, 6522, 6526, 6530, 6534, 6538, 6542, 6546, 6550, 6554, 6558, 6562, 6566, 6570, 6574, 6578, 6582, 6586, 6590, 6594, 6598, 6602, 6606, 6610, 6614, 6618, 6622, 6626, 6630, 6634, 6638, 6642, 6646, 6650, 6654, 6658, 6662, 6666, 6670, 6674, 6678, 6682, 6686, 6690, 6694, 6698, 6702, 6706, 6710, 6714, 6718, 6722, 6726, 6730, 6734, 6738, 6742, 6746, 6750, 6754, 6758, 6762, 6766, 6770, 6774, 6778, 6782, 6786, 6790, 6794, 6798, 6802, 6806, 6810, 6814, 6818, 6822, 6826, 6830, 6834, 6838, 6842, 6846, 6850, 6854, 6858, 6862, 6866, 6870, 6874, 6878, 6882, 6886, 6890, 6894, 6898, 6902, 6906, 6910, 6914, 6918, 6922, 6926, 6930, 6934, 6938, 6942, 6946, 6950, 6954, 6958, 6962, 6966, 6970, 6974, 6978, 6982, 6986, 6990, 6994, 6998, 7002, 7006, 7010, 7014, 7018, 7022, 7026, 7030, 7034, 7038, 7042, 7046, 7050, 7054, 7058, 7062, 7066, 7070, 7074, 7078, 7082, 7086, 7090, 7094, 7098, 7102, 7106, 7110, 7114, 7118, 7122, 7126, 7130, 7134, 7138, 7142, 7146, 7150, 7154, 7158, 7162, 7166, 7170, 7174, 7178, 7182, 7186, 7190, 7194, 7198, 7202, 7206, 7210, 7214, 7218, 7222, 7226, 7230, 7234, 7238, 7242, 7246, 7250, 7254, 7258, 7262, 7266, 7270, 7274, 7278, 7282, 7286, 7290, 7294, 7298, 7302, 7306, 7310, 7314, 7318, 7322, 7326, 7330, 7334, 7338, 7342, 7346, 7350, 7354, 7358, 7362, 7366, 7370, 7374, 7378, 7382, 7386, 7390, 7394, 7398, 7402, 7406, 7410, 7414, 7418, 7422, 7426, 7430, 7434, 7438, 7442, 7446, 7450, 7454, 7458, 7462, 7466, 7470, 7

# CRANE BOILERS

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No. 38 LW WHITEHALL BOILER

Crane Whitehall Sectional Hot Water Heating and Indirect Hot Water Supply Boilers suitable for Hard Fuel, automatic stoker and so. Indirect draught type consisting of sections with a light metal air seal joint and supporting the following EXCLUSIVE features -

- (1) Controlled "Water Space"
- (2) Increased "Collar" Heating Surface
- (3) Reinforced area high velocity gas flow
- (4) Protected secondary air



No. 4c DOMESTIC BOILER

A high efficiency is ensured by the maximum transmission of heat through the furnace wall composed entirely of direct heating surface. Conservatively rated they easily maintain maximum hot water output with very small fuel consumption.

Available in 12 sizes, and lower heated (Radiator) ensuring pure water supply.



THE CARLTON BOILER.

SERIES 10,

BASEMENT MODEL

## CRANE WHITEHALL SECTIONAL BOILERS

No.	Heating Surface Sq. Ft.	Heating Radiation		Hot Water Heating B.T.U. Per Hour	Length of Boiler Ins.	Width of Boiler Ins.
		B.T.U. Per Hour	Direct Radiation Sq. Ft.			
14	2.0	22,700	885	147,800	22	7 1/2
16	18.5	117,000	720	187,900	28	24
18	32.5	161,000	888	253,000	34	28
20	47.5	185,000	1,000	283,000	40	34
22	62.5	213,000	1,134	342,000	46	40
24	77.5	242,000	1,288	387,000	52	46
26	92.5	267,000	1,365	427,000	58	52
28	107.5	288,000	1,450	462,000	64	58
30	122.5	311,000	2,570	527,000	70	64
32	137.5	331,000	2,700	583,000	76	70
34	152.5	353,000	2,835	641,000	82	76
36	167.5	377,000	2,985	701,000	88	82
38	182.5	402,000	3,150	763,000	94	88
40	197.5	428,000	3,330	827,000	100	94
42	212.5	455,000	3,525	893,000	106	100
44	227.5	483,000	3,735	961,000	112	106
46	242.5	512,000	3,960	1,031,000	118	112
48	257.5	542,000	4,200	1,103,000	124	118
50	272.5	573,000	4,455	1,177,000	130	124
52	287.5	605,000	4,725	1,253,000	136	130
54	302.5	638,000	5,010	1,331,000	142	136
56	317.5	672,000	5,310	1,411,000	148	142
58	332.5	707,000	5,625	1,493,000	154	148
60	347.5	743,000	5,955	1,577,000	160	154
62	362.5	780,000	6,300	1,663,000	166	160
64	377.5	818,000	6,660	1,751,000	172	166
66	392.5	857,000	7,035	1,841,000	178	172
68	407.5	897,000	7,425	1,933,000	184	178
70	422.5	938,000	7,830	2,027,000	190	184
72	437.5	980,000	8,250	2,123,000	196	190
74	452.5	1,023,000	8,685	2,221,000	202	196
76	467.5	1,067,000	9,135	2,321,000	208	202
78	482.5	1,112,000	9,600	2,423,000	214	208
80	497.5	1,158,000	10,080	2,527,000	220	214
82	512.5	1,205,000	10,575	2,633,000	226	220
84	527.5	1,253,000	11,085	2,741,000	232	226
86	542.5	1,302,000	11,610	2,851,000	238	232
88	557.5	1,352,000	12,150	2,963,000	244	238
90	572.5	1,403,000	12,705	3,077,000	250	244
92	587.5	1,455,000	13,275	3,193,000	256	250
94	602.5	1,508,000	13,860	3,311,000	262	256
96	617.5	1,562,000	14,460	3,431,000	268	262
98	632.5	1,617,000	15,075	3,553,000	274	268
100	647.5	1,673,000	15,705	3,677,000	280	274

## CRANE DOMESTIC BOILERS FOR HOT WATER SUPPLY

No.	Capacity		Hot Water Supply Only				Heating Only B.T.U. Per Hour	Hot Water Heating B.T.U. Per Hour	Steam Pipe Ins.	Length of Boiler Ins.
	Water Fed. Gallons Per Hour	Hot Water Supply Only B.T.U. Per Hour	50-110° F.	50-120° F.	50-130° F.	100-150° F.				
40	8	68	80,000	87	90	60	25,000	18	20 1/2	
42	8	81	86,000	94	83	55	30,000	20	21 1/2	
44	10	100	105,000	117	88	70	35,000	21 1/2	21 1/2	
46	12	120	126,000	137	126	100	40,000	23 1/2	23 1/2	

\* Excluding base plate 12 ins. for Nos. 40 and 42, and 18 ins. for Nos. 44 and 46.

Hot water supply only, excluding No. 40, which has 8 ins. smoke outlet. Hot water supply with top smoke outlet. Smoke pipe and flue should not be less than size of smoke outlet. The preferred maximum size pipe is 8 ins.

## CARLTON BOILERS

No.	Heating Surface Sq. Ft.	Heating Radiation		Hot Water Heating B.T.U. Per Hour	Length of Boiler Ins.	Width of Boiler Ins.
		B.T.U. Per Hour	Direct Radiation Sq. Ft.			
2	1.40	12,500	450	12,500	2	5
4	2.80	25,000	900	25,000	4	5
6	4.20	37,500	1,350	37,500	6	5
8	5.60	50,000	1,800	50,000	8	5
10	7.00	62,500	2,250	62,500	10	5
12	8.40	75,000	2,700	75,000	12	5
14	9.80	87,500	3,150	87,500	14	5
16	11.20	100,000	3,600	100,000	16	5
18	12.60	112,500	4,050	112,500	18	5
20	14.00	125,000	4,500	125,000	20	5
22	15.40	137,500	4,950	137,500	22	5
24	16.80	150,000	5,400	150,000	24	5
26	18.20	162,500	5,850	162,500	26	5
28	19.60	175,000	6,300	175,000	28	5
30	21.00	187,500	6,750	187,500	30	5
32	22.40	200,000	7,200	200,000	32	5
34	23.80	212,500	7,650	212,500	34	5
36	25.20	225,000	8,100	225,000	36	5
38	26.60	237,500	8,550	237,500	38	5
40	28.00	250,000	9,000	250,000	40	5

The Carlton Sectional Hot Water Heating and Indirect Hot Water Supply Boilers combine secondary, auxiliary, and direct heating surfaces, the arrangement of heating surfaces being the same as above.

- (1) Controlled water level
- (2) Protected secondary air
- (3) Water cooled air flow solid grate bars

AGENTS FOR CRANE LTD., LONDON:-

G. E. TODD & CO. PTY. LTD.,  
17 Bent Street, Sydney.  
Telephone: BW 1488

E. L. YENCKEN & CO. PTY. LTD.,  
584 Little Collins Street, Melbourne.  
Telephone: MU 7712

CRANE  
SHEET 1

BARBARA & CATHERINE

**AIR CONDITIONING,  
HEATING and  
VENTILATING**

SECTION

**35**

SECTION

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CATALOGUES 1 to 7

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# Carrier Air Conditioning Limited

HEAD OFFICE—36-40 BOURKE STREET, SYDNEY, N.S.W.

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15-17 LINDOLN SQUARE SOUTH  
CARLTON, N.A.

Queensland Office:  
205 COB QUINN STREET  
BRISBANE.



Agents for South Australia:  
WILLIAM ADAMS & CO. LTD.,  
WAYNOJTH STREET, ADELAIDE.

Agents for West Australia:  
HARRIS, SCARPE & SANDOVERS LTD  
HAY STREET, PERTH.

## Air Conditioning Heating Refrigeration



CARRIER WEATHER-  
MAKER TYPE 50T  
2 to 7 tons capacity

### SELF-CONTAINED AIR CONDITIONING UNITS

with

INTEGRAL REFRIGERATION EQUIPMENT

$\frac{1}{2}$ -15 TONS CAPACITY



CARRIER WEATHERMAKER TYPE 55S  
2 to 2 tons capacity



CARRIER WEATHERMAKER TYPE 41B.  
5 to 15 tons capacity.

Single or Multi  
Room  
Applications



CARRIER ROOM  
WEATHERMAKER  
TYPE 31.  
1 to 1½ tons capacity

"MANUFACTURED WEATHER" MAKES EVERY DAY A GOOD DAY



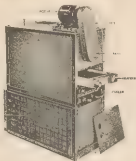


**CARRIER RECIPROCATING COMPRESSORS**  
Sizing from 1 to 100 tons are available for Freon or Methyl Chloride as refrigerant. They can be used singly or in multiple.



**CARRIER EVAPORATIVE CONDENSERS**

Comfort  
and  
Industrial  
Air  
Conditioning  
for  
Large  
Buildings



**UNITARY AIR CONDITIONER—DIRECT EXPANSION TYPE**

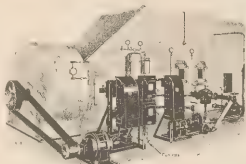
10-150 tons  
10-40 ft. PM

Carrier unitary air conditioners are available in direct expansion type, or as a condenser to cool other units.



**CARRIER UNIT HEATER**

Carrier unit heaters are available in direct expansion type, or as a condenser to cool other units, or when heating of a room is required.



**CENTRAL STATION AIR CONDITIONER—SPRAY TYPE**

Condition with external refrigeration plant, provides large capacity, dehumidifying, heating, humidifying, filtering.

MANUFACTURED WEATHER MAKES EVERY DAY A GOOD DAY

# W. G. CROSSLE & CO. ENGINEERS

COLLINS GATE, 377 LITTLE COLLINS STREET, MELBOURNE, C.I

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1 Wynyard Street, Sydney.

Vincent Ventilating & Air  
Conditioning Co.,  
21 Hunter Street, Newcastle.



RICHARDSON TYPE CL LIMIT LOAD FANS are actually "BUFFALO" LIMIT LOAD FANS, made in Australia under licence to the Buffalo Forge Co. of U.S.A. They are suitable for water gauges up to 6 inches and are made in sizes from 12 inch inlet to 30-inch inlet, both single width and double width. They are non-overloading, highly efficient and quiet operating. For general ventilation in offices and factories the standard fans are unsurpassed.

Special fans suitable for forced draught, high temperature induced draught are made, and are designated as SSL, SL, SCL and SHL, each type having its own particular application.

Fans of special designs in all types made of special material for handling corrosive fumes are also available.

Whenever a standard fan is suitable we offer it, but to us, no fan is too special, and we pride ourselves on building special fans.



RICHARDSON DOUBLE WIDTH LIMIT LOAD FANS are made under licence to the Buffalo Forge Company. They are made from small sizes up to 120-inch inlet, having capacities up to 400,000 c.f.m. Mine ventilation, forced draught, theatre ventilation and general work are their chief uses. Capital cost is often saved if they can be used, particularly in unfiltered plenum systems. With exhaust systems and filtered air systems they must be built into a suction chamber which, however, is often quite easy. These, like all other centrifugal fans, can have ball, roller or sleeve bearings, the last being used when quietness is wanted.



RICHARDSON BABY MULTIVANE FANS are made in sizes up to 12-inch inlet. They are centrifugal fans and work up to about 3-inch pressure. They can be supplied with ball or sleeve bearings, and are used where a compact fan to deliver clean air against moderate pressures is needed, but they do not possess the non-overloading characteristics of "Limit Load" fans.

They can be made single or double width and are often built into units. For small ventilating jobs involving ductwork, coils or resistance they are invaluable.

For higher pressures, other fans are available. The main thing is to submit your problem to us and let us offer a fan that is suitable.

For further information see Bulletin No. 3210.



RICHARDSON HVA FANS.—These are made under licence to the Buffalo Forge Company. They are light duty (up to 1½ inches pressure), centrifugal, double width fans, and are intermediate in price between a propeller fan and an orthodox single width centrifugal fan. They are used for many ventilation jobs, but particularly for building into units such as vertical air washers, evaporative condensers, hydro spray booths and unit air conditioners and the like. They can be fitted with ball or sleeve bearings and can be supplied as single, double, or triple units, each with runners mounted on a single shaft and driven by one motor.

For further information, ask for Bulletin 3206A.



**RICHARDSON MILL EXHAUSTERS or DUST FANS** are made in three main types. Firstly, the baby dust fan, with cast iron housing up to 10-inch inlet, heavy, rugged and reliable. Secondly, the class SD fans for general mill exhaust work. They are relatively slow speed. Steel plate construction, and are built to run up to 10-inch water gauge. They, too, can be built in special materials and in their class are highly efficient. Thirdly, we have the MXS class, which caters for the tough job—the bush sawmill, when slow speed, heavy rugged construction and long life all count. Their quality is reflected in their cost, for they are not as cheap as the SD fan. They run up to 30-inch water gauge on standard air, and can be fitted with renewable liners and have extra heavy bearings and all that stands for toughness. For information on Class D and SD fans see Bulletin 3202B.



**RICHARDSON "VB" BLOWERS** are made for pressures up to 30 inches of water gauge. For most cupolas, oil burners, and general high pressure work an efficient blower can be selected. The housings are of cast iron and the ranges in size covers capacities from 100 to 3,000 c.f.m. and pressures up to 30 inches.

Direct coupled jobs can be supplied, but we prefer to supply vee drive jobs because of the natural difficulty of being certain of the pressure required in high pressure jobs. With a vee drive, the speed and pressure is easily altered. For further information see Bulletin 3204.



**RICHARDSON PROPELLER FANS**, direct coupled, can be supplied ring mounted as shown—this depends on availability of castings—or plate mounted. The motors are usually totally enclosed, single or three phase. They are very suitable for paint spray booths, etc., and when specially applied can be really quiet. Where duct work is necessary it must at least have the same diameter as the fan and be short in length.

All our fans are heavy and robust, and have well powered motors. A propeller fan overloads against resistance, such as a contrary wind. A surplus of power in a direct coupled fan is an insurance against a burnt-out motor.

For further information, ask for Bulletin 3208.



**RICHARDSON PROPELLER FANS** can be supplied plate mounted and sometimes ring mounted in sizes up to 96 inches. Like all ordinary propeller fans, they are good for moving large volumes of air at low pressures, but towards 4-inch water gauge pressure they become inefficient and are not recommended. See Bulletin 3208. In their class, however, they are quite good and are, of course, mechanically robust and sound. They usually have ball bearings, which are not conducive to silence. Quietness can only be achieved with sleeve bearings and slow speed fans.

When they can be used they involve the least capital outlay of all fans. When the pressure exceeds 4 inch, then a vaneaxial fan or a centrifugal fan is the best choice.



**RICHARDSON TUBEAXIAL FANS** are normal propeller fans set in a short tube flanged at both ends and belt driven from outside the tube. The belts are protected from the air flow, which may contain dust or fume. They are fairly efficient at low pressures, but over 4-inch water gauge are very wasteful in power. They are made in sizes up to 60 inches diameter and are good for simple spray booths, general industrial ventilation, steam removal and, on occasions when the fan speed is low, and the only obtainable motor speed is higher than the fan speed. They usually avoid the need of totally enclosed motors. They are, however, not very quiet. They can be mounted with the air flow vertical or horizontal.

Tubeaxial fans are distinguished from vaneaxial fans in that they do not have fixed stationary vanes inside the duct adjacent to the runner.



**VANEAXIAL FANS** are made by RICHARDSONS under licence to the Buffalo Forge Company. These are axial flow—the air goes straight through. They are suitable for water gauges up to about 2½ inches, and in the larger capacities can sometimes involve the least capital outlay for handling air at efficiencies equal to the best centrifugal fans. They are just as quiet as centrifugal fans at high output, and efficiencies are about equal. They are not easily adapted to high temperatures as the bearings are in the air stream, and generally cannot be fitted with sleeve bearings. Capacities up to 200,000 c.f.m. are normal. They are not suitable for all applications, and should not be blindly chosen.

For further information, see Bulletins 3209 and 3211.

**RICHARDSON MULTISTAGE BLOWERS** are made to develop up to about 4 lbs. per sq. inch pressure or vacuum. They are used for vacuum producers for laundry presses, for slate drying and portable vacuum cleaners for blowing air into ice moulds to make clear ice, wherever small volumes at high pressure are required. They are also used for pneumatic conveying systems, but, of course, they only handle clean air, because clearances are small inside. They are used, with special modifications, as gas boosters and exhausters. The most popular size is the 4-stage 14-inch unit illustrated, but for larger volumes and higher pressures, specially designed units can be supplied.

**RICHARDSON INDUSTRIAL VACUUM CLEANERS** are rugged, robust and powerful. They are a vacuum cleaner on a large scale. Equipped with a 3 h.p. motor, a set of cleaning accessories, they are suitable for factories. They have found ready acceptance where something more enduring and powerful is needed than current domestic models.

Capacity is 100 c.f.m. against 4 inches of mercury vacuum. Overall dimensions about 4 ft. 6 in. high x 3 ft. 7 in. long x 2 ft. wide.

Where the control of dust on walls, beams, floors, crevices, and so on, is essential, they are invaluable. We have many satisfied customers.

**RICHARDSON VISCOUS AIR FILTERS** are very suitable for general ventilation work. Each viscous filter consists of a pressed steel frame, 20 inches by 20 inches, ready to bolt to its neighbor, an asbestos mat to a bulkhead, and two interchangeable inserts packed with woven galvanised steel or copper mesh coated with an odorless adhesive, on which dust impinges and adheres. For ventilation they are rated at 800 c.f.m. per filter. For large engine and compressor installations (copper mesh essential) at 600 c.f.m. per filter. The object of the two inserts is to facilitate servicing. The first insert catches the greater part of the dust and is cleaned. The inner insert which has had a smaller amount of the dust to intercept is slipped to the outside without cleaning, and a clean insert takes its place, and so on each time of service.

**RICHARDSON COMPRESSOR AND ENGINE INTAKE FILTERS** are, in the smaller sizes, made in a cylindrical shape with an annular space packed with woven copper mesh. The size chosen is based on the maximum instantaneous rate of air flow, which is easily assessed from a formula. Most compressor and engine intake filters are too small (the overall price of the unit must be kept down). A good filter can pay for itself ten times over in the life of an engine or a compressor in saving rebore and maintenance. We make, select and sell that filter.

For larger capacities than those handled by the cylindrical type of filters, we offer the regular type of filter with extra heavy copper mesh packing, and these can be built up into box units, or alternatively, supplied as a conventional filter bank connected by ductwork to the engine.

**MULTICLONE DUST COLLECTORS** are made under license to the Western Precipitation Co. of America. They are used when a higher collecting efficiency is wanted than is obtained by the use of ordinary cyclones. The diagrammatic cut-away illustration shows that the unit consists of a multiplicity of small diameter cyclones in which high efficiency separation of fine dust is accomplished with a minimum power consumption. We make a range from single, small capacity tubes of 3-inch diameter up to large unit of several hundred larger tubes with high capacities. They can be supplied with rotary discharge valves, or screw discharge valves, as they work equally well under suction or under pressure. They are eminently suitable for high temperature operation. It is our standard practice, wherever possible, to test in a pilot model and state an efficiency based on actual experiment. These, too, can be made in stainless steel for handling corrosive fumes or for extreme cleanliness.

**TRANE EXTENDED SURFACE UNITS**—These units are made under license to the Trane Company of Canada Ltd. They consist essentially of copper tube with long, continuous copper or aluminium fins held on to the tube by a special expanding process. They can be used for air heating, using steam or hot water as a medium, and for air cooling, using brine or direct expansion refrigerant as the cooling medium. They can be adapted for a number of purposes such as cooling engine water, cooling oil, cooling hot gases, and are used extensively on wool dryers, industrial heating processes, warming air for ventilation purposes, and cooling air for air conditioning purposes, laundry dryers and many other applications.





**RICHARDSON UNIT HEATERS.**—These Unit Heaters are made in a range of sizes and capacities and are widely used for factory heating. They consist essentially of an electrically driven Propeller Fan set behind a Trane Extended Surface Air Heater which is fed by steam or hot water. A number of models are made ranging from large capacities down to small capacities and having high speed motors for industrial use and slow speed motors for quieter installations.



**TRANE PROJECTION HEATERS.**—This is a unit heater that can be used with steam or hot water and incorporates an electric fan which projects the air vertically downwards from a considerable height, thus recirculating the warm air which exists at high levels. When carefully selected and installed, they are effective, particularly in high buildings. The unit is of solid construction and hundreds of them are giving effective service throughout Australia.



**RICHARDSON CONVECTOR CABINETS.** This is a heat sheet metal cabinet in the base of which is set a Trane Extended Surface Air Heater which is fed with either steam or hot water, thus producing a stack effect in the heater, the warm air being discharged outwards into the room. The unit can be incorporated in a recess in a wall. They are best installed under windows so that the warm ascending air neutralises the cold down draught from the windows. The chief application is in the domestic heating field in homes and in offices.



**ANEMOSTAT AIR DISTRIBUTORS.**—This distributor is in principle a ceiling air distributor consisting of a series of specially designed concentric cones to distribute large quantities of air into a space without draught, and quietly. In many cases they cause economies in duct design, but their particular virtue is their draught free distribution.



**BURGESS SNUBBERS.**—These are made under licence to the Burgess-Manning Co. of U.S.A., and are a heavy rugged device with a long life, used for silencing the exhausts of internal combustion engines, the discharge of air compressors, the intake of air compressors, and wherever noise is formed by a rapidly pulsating flow of gases or air either inwards or outwards. Special snubbers have spark arresting devices incorporated and these are largely used on diesel engines. They are not suitable for rare, as their construction is so heavy. They set up very little resistance to gas flow.



**AUSTRAL HUMIDIFIER.**—This consists essentially of a spinning disc against which a hygrostatically controlled jet of water impinges, being romised by means of fine teeth on the disc. This mist is then projected horizontally by means of a high speed propeller fan set behind the unit. The fan and the disc are driven by means of an electric motor. They are very valuable in areas where humidity must be maintained and wherever they have been installed correctly they are held in high esteem.

# H. P. GREGORY & COMPANY PTY. LIMITED

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## PUMPING EQUIPMENT FOR ALL INDUSTRIES



Nash Simplicity

### NASH CENTRIFUGAL PUMPS

For all centrifugal pump services including Booster Pumps for buildings.

Compact—motor armature and pump impeller are mounted on the same shaft—simplified, no bearings in pump casing, only one stuffing box—accessible—pump impeller can be removed without breaking pipe connections. Size, 1 in. to 6 in. of bronze fitted standard construction.

### NASH SELF-PRIMING SUMP PUMPS

The Nash Self-Priming Sump Pump is designed for handling sewage water and liquids reasonably free from solids. The pump is mounted above the sump, where it is readily accessible. There are only two moving parts—the centrifugal impeller and the vacuum priming rotor—both rotate without metal to metal contact in casing. Both are mounted on the same shaft that carries the rotor of the electric motor, making possible a compact assembly.

### NASH SEWAGE EJECTORS

For pumping unscreened sewage or drainage from basements below the street sewer level, handling cryde sewage from low level districts, pumping effluent, sludge, or other heavy liquids.

The Jennings Sewage Ejector is of the pneumatic type. Air compressed to the necessary pressure by a Nash Hytor Air Compressor is used as the motive power to pump the accumulated sewage from a pot to the sewer. Air is compressed to the pressure at which it is used. There are no storage tanks, reciprocating air compressors or screens. Air valves and reducing valves are avoided. Sizes from 50 to 300 gallons per minute.

### NASH VACUUM PUMPS AND COMPRESSORS

Hytor Vacuum Pumps and Compressors have but one moving part and operate without metal to metal contact in the pump. Supplied in standard sizes up to 5,000 C.F.M. vacuums to 29.5 in. Hg.—pressures to 90 lbs.

### NASH VACUUM STEAM HEATING PUMP

Removes air and condensation from return lines of vacuum steam heating systems, discharges the air to atmosphere and returns water to the boiler. Pump con-

sists of two independent units combined on a single casing. Air unit exhausts air and vapours and delivers these to atmosphere without back pressure. Water unit removes the condensate and pumps it directly to the boiler. Capacities up to 300,000 sq. ft. of equivalent direct radiation.

### BEECOX VACUUM PUMPS, COMPRESSORS AND GAS BOOSTERS

Beecox pumps are operated on the full rotary principle and are positive at all speeds. Automatic oil circulating systems are standard on all sizes. Supplied with plain or slipper vanes, air or water cooled. Capacities from 2½ to 500 C.F.M., vacuums to within .5 in. of the barometer or better. Pressures on air or gas to 15 lbs.

### BEECOX LIQUID PUMPS

Small compact rotary high-speed self-priming pumps. Water pumps, oil pumps and special liquid pumps.

### PEERLESS CENTRIFUGAL SELF-PRIMING PUMPS

Peerless electric motor driven pumps are self-priming and are specially adapted for sump and sewage service with automatic float control. The entire pump is located in a convenient spot above water level—submergence is not necessary. Sizes 1½ in., 1½ in., and 2 in.

### EBSRAY ROTARY GEAR (VIKING TYPE) PUMPS



For pumping most clean liquids that will flow. A simple positive slow-speed pump with only two moving parts. Capacities from 500 to 5,000 gallons per hour—pressures to 100 lbs. Available in cast iron, zinc-free bronze, or stainless steel.

### EBSRAY BOILER FEED PUMPS

Rotary internal gear positive high pressure pumps requiring no internal lubrication and fitted with water lubricated bearings. All pumps fitted with automatic bypass pumps are specially designed for fitting to automatically controlled steam boilers.

### EBSRAY HIGH VACUUM PUMPS

A precision built industrial vacuum pump for vacuums to 0.005 mm. of Hg. or better. Built in two sizes, 1 C.F. and 5 C.F. displacement.

All the above equipment is manufactured in Australia.  
Bulletins and complete information is available upon request.

KANSAS CATALOGUE



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## B. F. STURTEVANT COMPANY

### Fans of all Types and Air Conditioning Equipment

A FEW FAMOUS STURTEVANT PRODUCTS—Silentvane Fans—Multivane Fans—Roxvane Fans—Planovane Fans—Planning Mill Exhausters—Monogram Fans—Axiflo Fans—Centrifugal Compressors—Centrifugal Vacuum Producers—Gas Boosters—Turbovane Forced Draft and Induced Draft Fans—Vane Control—High Temperature Fans—Air Washers—Heaters—Vacuum Cleaning Plants.



Axiflo Pressure Fan

### SILENTVANE FANS

Engineered for installations involving heating, ventilating, air conditioning and industrial applications. Silentvane fans possess the extremely desirable characteristics of a rising pressure curve and a true non-overloading horsepower curve—indicating the highest efficiencies ever developed in fan practice. The increase in mechanical and static efficiency and the extensive range of operation over which these maximum efficiencies are obtainable result in considerable power savings.

### DESIGN 8 SILENTVANE

For heating, ventilation, and air conditioning where fan noise cannot be tolerated, the Design 8 Silentvane fans have characteristics of extreme quietness in operation and low outlet velocity.

CONDENSABLE CAPACITY TABLES, SINGLE WIDTH

Size	12" Stat. Pres.		18" Stat. Pres.		24" Stat. Pres.		30" Stat. Pres.	
	1200 Outlet Vel.	1200 Outlet Vel.	1800 Outlet Vel.	1800 Outlet Vel.	2400 Outlet Vel.	2400 Outlet Vel.	3000 Outlet Vel.	3000 Outlet Vel.
10	1249	1188	4	2154	2060	3	3654	3520
12	1538	1468	5	2704	2592	4	4504	4368
14	1827	1748	6	3254	3120	5	5054	4920
16	2116	2028	7	3804	3672	6	5604	5472
18	2405	2308	8	4354	4224	7	6154	6024
20	2694	2588	9	4904	4776	8	6704	6576
22	2983	2868	10	5454	5328	9	7254	7128
24	3272	3148	11	6004	5880	10	7804	7680
26	3561	3428	12	6554	6432	11	8354	8232
28	3850	3708	13	7104	6984	12	8904	8784
30	4139	3988	14	7654	7536	13	9454	9336
32	4428	4268	15	8204	8088	14	10004	9888
34	4717	4548	16	8754	8640	15	10554	10440
36	5006	4828	17	9304	9192	16	11104	11000
38	5295	5108	18	9854	9744	17	11654	11552
40	5584	5388	19	10404	10304	18	12204	12104
42	5873	5668	20	10954	10860	19	12754	12660
44	6162	5948	21	11504	11416	20	13304	13224
46	6451	6228	22	12054	11976	21	13854	13784
48	6740	6508	23	12604	12536	22	14404	14344
50	7029	6788	24	13154	13096	23	14954	14904
52	7318	7068	25	13704	13656	24	15504	15464
54	7607	7348	26	14254	14216	25	16054	16024
56	7896	7628	27	14804	14776	26	16604	16584
58	8185	7908	28	15354	15336	27	17154	17144
60	8474	8188	29	15904	15896	28	17704	17704
62	8763	8468	30	16454	16456	29	18254	18264
64	9052	8748	31	17004	17016	30	18804	18824
66	9341	9028	32	17554	17576	31	19354	19384
68	9630	9308	33	18104	18136	32	19904	19944
70	9919	9588	34	18654	18696	33	20454	20504
72	10208	9868	35	19204	19256	34	21004	21064
74	10497	10148	36	19754	19816	35	21554	21624
76	10786	10428	37	20304	20376	36	22104	22184
78	11075	10708	38	20854	20936	37	22654	22744
80	11364	10988	39	21404	21496	38	23204	23304
82	11653	11278	40	21954	22056	39	23754	23864
84	11942	11568	41	22504	22616	40	24304	24424
86	12231	11838	42	23054	23176	41	24854	24984
88	12520	12128	43	23604	23736	42	25404	25544
90	12809	12408	44	24154	24296	43	25954	26104
92	13098	12698	45	24704	24856	44	26504	26664
94	13387	12988	46	25254	25416	45	27054	27224
96	13676	13278	47	25804	25976	46	27604	27784
98	13965	13568	48	26354	26536	47	28154	28344
100	14254	13858	49	26904	27096	48	28704	28904
102	14543	14148	50	27454	27656	49	29254	29464
104	14832	14438	51	28004	28216	50	29804	30024
106	15121	14728	52	28554	28776	51	30354	30584
108	15410	15018	53	29104	29336	52	30904	31144
110	15699	15308	54	29654	29896	53	31454	31704
112	15988	15598	55	30204	30456	54	32004	32264
114	16277	15888	56	30754	31016	55	32554	32824
116	16566	16178	57	31304	31576	56	33104	33384
118	16855	16468	58	31854	32136	57	33654	33944
120	17144	16758	59	32404	32696	58	34204	34504
122	17433	17048	60	32954	33256	59	34754	35064
124	17722	17338	61	33504	33816	60	35304	35624
126	18011	17628	62	34054	34376	61	35854	36184
128	18300	17918	63	34604	34936	62	36404	36744
130	18589	18208	64	35154	35496	63	36954	37304
132	18878	18498	65	35704	35956	64	37504	37864
134	19167	18788	66	36254	36616	65	38054	38424
136	19456	19078	67	36804	37176	66	38604	38984
138	19745	19368	68	37354	37736	67	39154	39544
140	20034	19658	69	37904	38296	68	39704	40104
142	20323	19948	70	38454	38856	69	40254	40664
144	20612	20238	71	39004	39416	70	40804	41224
146	20901	20508	72	39554	39976	71	41354	41784
148	21190	20798	73	40104	40536	72	41904	42344
150	21479	21088	74	40654	41096	73	42454	42904
152	21768	21378	75	41204	41656	74	43004	43464
154	22057	21668	76	41754	42216	75	43554	44024
156	22346	21958	77	42304	42776	76	44104	44584
158	22635	22248	78	42854	43336	77	44654	45144
160	22924	22538	79	43404	43896	78	45204	45704
162	23213	22828	80	43954	44456	79	45754	46264
164	23502	23118	81	44504	45016	80	46304	46824
166	23791	23408	82	45054	45576	81	46854	47384
168	24080	23698	83	45604	46136	82	47404	47944
170	24369	23988	84	46154	46696	83	47954	48504
172	24658	24278	85	46704	47256	84	48504	49064
174	24947	24568	86	47254	47816	85	49054	49624
176	25236	24858	87	47804	48376	86	49604	50184
178	25525	25148	88	48354	48936	87	50154	50744
180	25814	25438	89	48904	49496	88	50704	51304
182	26103	25728	90	49454	50056	89	51254	51864
184	26392	26018	91	50004	50616	90	51804	52424
186	26681	26308	92	50554	51176	91	52354	52984
188	26970	26598	93	51104	51736	92	52904	53544
190	27259	26888	94	51654	52296	93	53454	54104
192	27548	27178	95	52204	52856	94	54004	54664
194	27837	27468	96	52754	53416	95	54554	55224
196	28126	27758	97	53304	53976	96	55104	55784
198	28415	28048	98	53854	54536	97	55654	56344
200	28704	28338	99	54404	55096	98	56204	56904
202	28993	28628	100	54954	55656	99	56754	57464
204	29282	28918						



# FANS, HEATERS

and

## ASSOCIATED EQUIPMENT

*for Theatres, Factories, Offices,  
Schools, Public Halls and Homes*



### NON-OVERLOADING CENTRIFUGAL FAN

This fan is suitable for all classes of ventilation work and, owing to its sturdy construction, may be applied to many types of industrial installations.

The wheel is of the backward curved type with self-limiting power characteristics, the horsepower remaining practically constant should the volume be increased due to lowered resistance.

The operating efficiency is high and, provided the correct size fan is chosen for the installation, the noise level is very low. The design is such that installation costs are comparatively low.

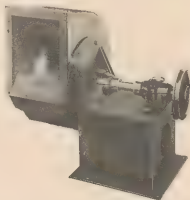


### MULTIVANE TYPE CENTRIFUGAL FAN

The non-overloading centrifugal fan with backward-curved blades, presents a stable characteristic which, from the operating viewpoint, is particularly valuable. However, this type of fan presents quite large dimensions.

We have now produced a fan with small dimensions and a relatively stable pressure curve. It is ideal for ordinary ventilating installations working with low or moderate pressures.

The fan casing is rotatable and the discharge direction can be adapted to any angle desired by a few simple manual operations.



### CENTRIFUGAL EXHAUST FAN

This type of fan, fitted with straight radial blades, is employed for the removal of sawdust, shavings, etc., as well as for many special ventilating purposes where the conveyed medium contains such particles as may tend to adhere to the fan blades.

Such applications are exhausting air from kitchens, paint spray booths, fume gases. The fan may be lined internally with ebonite or other non-corrosive material when removing acid fumes, etc.

These fans are available either with direct coupled motors or for belt drive, according to location.



## AIR CONTROL EQUIPMENT PTY. LTD.

DUNNING AVENUE — MU 1211 — WATERLOO, SYDNEY

A UNIT OF ELECTRICITY METER & ALLIED INDUSTRIES LIMITED

RAMSAY'S CATALOGUE

AIR CONTROL EQUIPMENT PTY. LTD.



### AXIAL FLOW PROPELLER FAN

This fan has a very wide range of applications, varying from the simplest of exhaust systems to complete plenum ventilating installations. The impeller, designed on aerodynamic principles, is cast in one piece from a light aluminium alloy possessing exceptional strength. It is accurately balanced and, owing to its small flywheel capacity, has a relatively small torque. The fan is manufactured in various arrangements for direct or belt drive.

### STEEL COKE FIRED WARM AIR FURNACE

This furnace has been specially designed for coke burning and, by reason of its extreme horse-shoe shaped radiator, provides a maximum of heating area making it an ideal unit for air heating applications in theatres, public halls, homes, etc. Strongly constructed from mild steel and provided with a very simple and efficient blower, it can be depended upon to give many years' trouble free efficient service. Suitable also for use with hard coal.

Complete details are given in a special brochure on Warm Air Heating which will be sent on request.



### UNIT HEATER

Unit heaters provide an economical method of heating factories, warehouses, offices, etc., either completely or in part. The tempered air can be controlled and directed to that part of the premises where it is really needed, thus providing a suitable temperature in the working zone.

The heaters are robust in construction and fitted with cast aluminium rotors and standard motors.

The units are manufactured for use with steam, hot water or electricity. They are simple to install, clean cut in design, and trouble free in operation.

#### Air Control Equipment also specialises in:-

- Spray Booths, including modern water curtain types
- Forge Blowers
- Filters for air cleaning
- Drying Ovens and Dehydrators

#### Complete Systems for:-

- Air Conditioning
- Heating and Ventilating
- Dust and Fume Exhausting
- Pneumatic Conveying

**WRITE FOR FURTHER INFORMATION AND ILLUSTRATED BROCHURES**

**AIR CONTROL EQUIPMENT Pty. Ltd.**

**DUNNING AVENUE - MUI211 - WATERLOO, SYDNEY**

A UNIT OF ELECTRICITY METER & ALLIED INDUSTRIES LIMITED

Specify

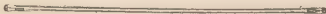
35/5

Westinghouse

# STERILAMP

**CONTROLS CONTAMINATION AND CROSS INFECTION DUE TO  
AIR BORNE BACTERIA IN HOSPITALS, FOOD PROCESSING  
LABORATORIES, FACTORIES, HOTELS, NURSERIES, HOMES AND  
EXECUTIVE OFFICES.**

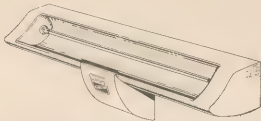
Invisible bacteria and mould spores, ever present in city air, cannot be removed by filters and washing. These are carried from room to room by air conditioning and ventilating systems and constitute a very real hazard, particularly in hospitals and food processing plants, resulting in cross infection and food spoilage. By the installation of Westinghouse Sterilamps in air ducts and over processing tables, etc., up to 98 per cent. of all bacterial organisms are effectively destroyed. Sterilamps are available in a variety of fittings for all sanitization problems from drinking glasses to complete ventilating systems.



Illustrated above is the Sterilamp WL785-3D for installation in air ducts. The lamp is 30 inches overall with a diameter of approximately  $\frac{3}{8}$  in. The necessary sockets, transformers and mounting brackets are supplied with the lamps. Effective life is 4,500 hours, and power supply required is 240 volt 50 cycle.

Where the elimination of dust, smoke and dirt as well as bacteria from the air is required, the Westinghouse Precipitron, electronic air cleaner, may be used in conjunction with Sterilamp installations. Complete descriptive literature and detailed information are available on request.

Illustrated on the right is the Westinghouse Sterilamp SLW wall fitting, suitable for such installations as executive offices, hospitals, nurseries, etc. Finish is cream Dulux; length, 49½ in.; depth, 8 in.



**WESTINGHOUSE ROSEBERRY PTY. LTD.**

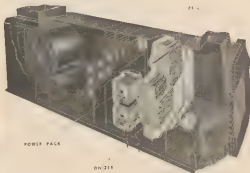
**JOYNTON AVENUE, WATERLOO, SYDNEY**

A UNIT OF ELECTRICITY METER & ALLIED INDUSTRIES LIMITED

BACTERIA CONTROL

# Westinghouse Precipitron<sup>\*</sup>

*the Electronic Air Cleaner*



## BASIC OPERATION OF THE PRECIPITRON

Air-borne dust particles entering the air conditioning systems pass through an "ionizer zone" where they obtain a positive electrical charge. After travelling a short distance these positively charged dust particles are attracted to the negatively charged collector plates where they remain until washed away.

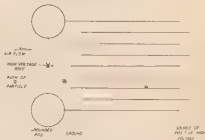


Cutaway section of a complete air conditioning unit showing a typical application of Precipitron for the removal of dust and smoke particles down to 1/250,000th of an inch.

The Precipitron Air Cleaner is a device for installation in air conditioning systems to remove air-borne dust and dirt particles and has been profitably applied to cleaning ventilating air supplying machinery, power plants and delicate instruments as well as in retail stores, hospitals, night clubs, restaurants and office buildings. To meet specific industrial problems such as oil mist in machine shops, specially developed self-contained cabinets are available.

Cell Size	Face Velocity	(Wickress Test) Efficiency	Capacity C.F.M.
36 in. x 24 in.	300	90	1800
24 in. x 24 in.	300	90	1200
36 in. x 24 in.	375	85	2250
24 in. x 24 in.	375	85	1500

\* Efficiency by weight test—over 95%



## ONLY THREE MAJOR PARTS

A Precipitron cell has only 3 major parts—the Power Supply, Ionizer and Collector. These cells are stacked in banks, the number depending upon the quantity of air to be cleaned—one power supply, however, may be used to energise up to a number of cells before an additional power supply is necessary.

A complete manual, explaining the equipment in detail, its efficiency and economy of operation, is available on request.

## WESTINGHOUSE ROSEBURY PTY. LTD.

P.O. Box 23, Waterloo, Sydney-MX1101

A UNIT OF ELECTRICITY METER & ALLIED INDUSTRIES LIMITED

BAMSA'S CATALOGUE



Manufacturers of

"ALL RED"

# FANS, BLOWERS AND EXHAUSTERS

FOR

- MECHANICAL VENTILATION SYSTEMS
- COMMERCIAL & INDUSTRIAL AIR CONDITIONING
- DUST AND FUME REMOVAL SYSTEMS

Malley's industrial fans are specially suitable for use in air conditioning plants, ventilating systems, and all equipment designed for the handling of dust, fumes, sawdust, and industrial debris. Standard types of fans include:

Multivane Fans (Forward or Backward Curve)  
Steel Plate Dust Exhaust Fans  
Heavy Duty Mill Exhausters  
Blowers for Forges, Cupolas, etc.  
Ring Type Wall or Ceiling Ventilating Fans

Tunnel Type Spray Booth Fans  
Gas Booster Fans  
Multi-stage Turbo Compressors  
Mancooler Fans for Foundries, Rolling Mills, etc.  
Heavy Duty Industrial Vacuum Cleaners, etc.

In addition, special fans are available for purposes unable to be met by using standard fans.



## MULTIVANE FANS

For fresh air supply, and the removal of heat and fume-laden air.

Sizes from No. 1 (6-inch diam. inlet) to No. 12 (72-inch diam. inlet).

Illustrations show two views of a Volumetric Medium Pressure Multivane Fan. Left: Fan showing drive shaft. Right: Fan showing intake and runner or impeller. Forward or Backward Curve Impellers. Standard fans are arranged for V-belt or any other normal drive.



## EXHAUST FANS

For all industrial purposes. Available in two series or groupings: Heavy Duty Mill Exhausters and S.P. Exhausters.

Heavy Duty Mill Exhausters (large series illustrated at right): Sizes from No. 25 (11-inch diam. inlet) to No. 80 (33 inch diam. inlet).

In the smaller sizes, housings are convertible to any direction of discharge.

Standard runners are of the radial paddle wheel type, but different types are available to meet special conditions.

S.P. Exhausters (small series illustrated at left). Made in five sizes from No. 5 (4-inch diam. inlet) to No. 9 (9-inch diam. inlet). Suitable for purposes similar to Heavy Duty Mill Exhausters, where equipment is on a smaller scale.

Housings are convertible to any direction of discharge.



RAMSAY'S CATALOGUE

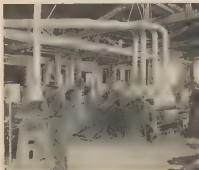


## EXHAUST AND CONVEYING SYSTEMS



Malleys are specialists in the application of Exhaust Fans to any kind of industrial use. Their engineers fabricate and install ductwork for exhaust or conveying systems for the removal of dust, fumes, shavings, wool, etc. In many manufacturing processes the production of dust is unavoidable and, should this be allowed to escape into the atmosphere, not only the health of the operatives is affected, but considerable damage is caused to high-speed machinery, such as electric motors.

The accumulation of sawdust or refuse, apart from fire risk, causes delays and hampers the efficient operation of plant.



Malleys install exhaust or conveyor systems for plants such as: woodworking machines, polishing wheels, blasting equipment, textile working plants, forge and furnace blast, etc. Suitable collectors for the particular requirements are also manufactured.

Top Left: Sawdust conveying system showing discharge pipes from fans to cyclone separator.

Left: Suction pipes from woodworking machines.

### PAINT SPRAY BOOTHS

Illustrated at right is a Malley's Paint Spray Booth with fan mounted at rear. Notice that the motor is placed outside the exhaust duct away from the fume laden air stream. Malley's Tunnel Type Propeller Fans are used for this purpose.



### AERO-TYPE PROPELLER FANS

These fans are particularly suitable for handling large volumes of air against small resistance. They are highly efficient, being designed on modern aerodynamic principles. The Tunnel Type, illustrated at left, is designed for exhausting paint fumes, inflammable vapours, etc., and therefore finds a ready application for paint spray booths, etc.



## MALLEYS LTD.

HEAD OFFICE: 30 MOUNTAIN STREET, SYDNEY, N.S.W.

Postal Address: Box 2, Broadway, Sydney

Telegrams: "Malley's" Sydney.

Telephone: M 5181.

BRISBANE BRANCH: 437 ADELAIDE STREET, BRISBANE

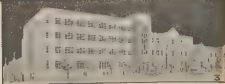
Postal Address: Box 1853 W, G.P.O. Brisbane.

Telegrams: "Malley's" Brisbane Telephone: B 2993.



# PANEL RADIANT HEATING SYSTEM

The Bank of England Building, London, is Panel Heated



1. ANZAC HOUSE, MELBOURNE Architects: Stanley T. Parker (Oakley & Parker)
2. A.M.P. BUILDING, MELBOURNE. Architects Bates Smart and McCulloch.
3. GOVERNMENT OFFICES, HOBART. Architects Dept of Public Works

BUILDINGS HEATED BY THE "GARNAY" PANEL SYSTEM

## The Panel System can be applied to FLOORS - WALLS - CEILINGS

### ADVANTAGES.

This system presents very real advantages for the architect

1. It is absolutely concealed; no exposed radiators or pipes to detract from the interior design or to interfere with the architect's layout
2. Full use of floor space—no encroachment into floor area.
3. Allows sub-divisional alterations of offices without alterations to panel system.
4. When the structural frame of a building has been completed, the heating system is also complete and heating can begin immediately, to facilitate completion of interior finishing work.
5. Low running costs—approximately 20 per cent. less than other systems.

6. Hygienic—does not collect or harbour dust.

7. Natural warmth—comfort obtained with lower air temperatures

The panel system has now been proved beyond doubt by many years of satisfactory operation in all types of buildings. After having been thoroughly tried and tested in England and Australia, this system has now been widely adopted in the United States of America and Canada.

Latest Gardner & Naylor installations include Royal Insurance Building, Doctors' Professional Rooms, Parliament Place, Union Bank, Collins Street, British Phosphate Commission's Building, Yencen's Building, Dean's Building, etc. A combined floor and ceiling panel system is now being installed at the Geology School and a floor panel system at the Arts School, Melbourne University.

The Building of the Royal Institute of British Architects is Panel Heated



4. KODAK BUILDING MELBOURNE Architects: Oakley and Parker
5. BANK OF NEW SOUTH WALES MELBOURNE Architects: Godfrey and Spowers.
6. ALKIRA HOUSE MELBOURNE. Architect James H. Wardrop
7. GENERAL MOTORS-HOLDINGS LTD. PORT MELBOURNE Architects: Staff of G.N.-N.

BUILDINGS HEATED BY THE "GARNAY" PANEL SYSTEM





INTRODUCTORY DATA  
ON  
HOME AND INDUSTRIAL SYSTEMS  
FOR  
ARCHITECTS, ENGINEERS AND BUILDERS

---

*Patentees and Distributors for Victoria*

**WONDER-HEAT COMPANY**

254 ALBURN ROAD, HAWTHORN

Telephones: WA 2598 — WA 2317

*See Last Page for Distributors in Other States and New Zealand*

## The Modern Method of Home Heating

The NEW Wonder-Heat is the most remarkable development of the many attempts to evolve the perfect home-heating system. Infinitely more than a mere fire-grate, the NEW Wonder-Heat retains the traditional domesticity of the hearth and combines modern scientific principles of draughtless heat with concurrent ventilation in what may be described as a modified form of air-conditioning. You can see the cheery flames; feel the comfortable warmth pervading the whole room without creating harmful fire-draughts; and breathe in an atmosphere of warmed oxygen-laden air.

The NEW Wonder-Heat has characteristic advantages found in no other household unit. The armour plate glass door allows an uninterrupted view of the fire. In certain circumstances one unit will provide heating for more than one room from a single fire. It will burn any kind of solid fuel and direct into the room up to four times more heat than would be obtainable from an equal quantity burning in an open fireplace; the rate of combustion being under positive control at all times. The enclosed combustion chamber ensures complete safety, preventing smoke and fumes from entering the room and confining ashes and sparks within the grate.

Whether included as an integral part of the Architect's plan, or installed in the process of "modernising," the NEW Wonder-Heat will add to the aesthetic appearance of any room in any cottage, flat or mansion, and at a cost well within reach even of the basic-wage income. With all his wealth, the man in the highest income group can buy no better home-heating system than is provided by the NEW Wonder-Heat.

Challenging statements, these, but let us explain in some detail just what there is behind them.



The NEW Wonder-Heat (Inbuilt type) installed in the "Beaufort House" sponsored by the Victorian Housing Commission. Note the absence of conventional chimney work.



Old-style setting modernised by the NEW Wonder-Heat (Inbuilt type) yet retaining the cheerfulness of the open fire.

### PATENTED PRINCIPLES:

The NEW Wonder-Heat must not be confused with any other type of enclosed heating unit, most of which heat and re-heat the stale air already in the room until there is produced a completely artificial atmosphere, deficient in oxygen and natural humidity.

By the application of a patented principle the NEW Wonder-Heat draws FRESH AIR from OUTSIDE the house, heats it through a series of fins and ducts within the scientifically designed combustion chamber, and, by convection, literally pours it into the room at the rate of thousands of cubic feet per hour. The smallest unit (No. 1), for instance, has been tested independently under controlled conditions and proved to circulate fresh warmed air in an average sized room at the rate of 8,000 cubic feet per hour, i.e., three to four complete replenishments of air every hour!

This unique feature of drawing fresh air from outside and delivering it through the heating unit prevents the development of draughts. The air movement, being directed away from the fire, thus ensures an even distribution of warmth throughout the whole area of the room.

In those rare cases where, owing to the peculiarities of fireplace or building construction, it is not possible to feed outside air directly through the heating unit, the NEW Wonder-Heat recirculates the air within the house and still retains its own characteristic advantages.

Unique in the NEW Wonder-Heat is its capacity to heat more than one room. This is made possible only by the patented principle inherent in the unit, which enables a controlled volume of heated air to be conveyed, by pressure, through transmitting ducts and grilles.

## THERMAL EFFICIENCY:

The B.T.U. index of any fuel varies according to its quality and nature, but, for any given fuel, the thermal efficiency of the NEW Wonder-Heat is of the order of 70 per cent. This is more than four times greater than is obtained from an average open fireplace, which gives only about 16 per cent. of effective heat from the fuel consumed. The thermal efficiency of the NEW Wonder-Heat is derived entirely from the patented principle employed and is not otherwise attainable. Combustion is extremely thorough, the ash residue and fuel consumption being remarkably low in relation to the volume of air heated, because of its high efficiency.

## CONSTRUCTION AND APPEARANCE

The NEW Wonder-Heat is strongly constructed for long-term service, being made from steel plate with all joints reinforced and electrically welded. Inside the casing there is the unique patented "core" constructed from 1 in. steel tubes and a readily removable grate of cast iron. The front is well protected, being fitted with a large safety door, which has clear armor plate glass panels through which the fire is clearly visible, and a generous sized ash-pan which slides in at the bottom. The finish is in a rich bronze enamel baked on to the steel at high temperature, and bright nickel plating trims the door frame, levers and control handle.

The design of the "In-Built" type is such that it may be fitted with complete architectural unity to any existing fire place or used as a motif for interior painting. In the construction of new homes considerable savings can be effected by eliminating expensive surrounds and costly chimneys, a fire-resistant fire being all that is necessary.

For rooms without fireplaces the attractive looking "Console" type is used. The construction of this type differs only in the outside casing.

## TYPES AND SIZES:

The NEW Wonder-Heat is made in two types, i.e., the "In-Built," which is adaptable (with or without top or side casing) to any existing fireplace, and the "Console" for use in rooms not equipped with fireplaces.

There are four standard sizes, each type, the heating capacities of which are conservatively stated in the tables shown on the following pages. These tables and the accompanying diagrams also show the essential measurements and



The NEW Wonder-Heat (Console type) installed in a room without a fireplace

dimensions necessary to enable the Architect or Builder to draw his relevant specifications. Photographs of installed units are reproduced on this and the preceding page.

## INSTALLATION AND OPERATION

In the first instance it is necessary to decide upon the heating capacity required. This is arrived at as follows:

## SELECTING THE SIZE:

(1) Determine the cubic content of the room, i.e., multiply the length by the breadth by the height. (Example: a room 20 ft. long x 14 ft. wide x 10 ft. high will total 2,800 cubic feet.)

(2) From the tables given, select the unit size with the stated capacity suitable for the ascertained cubic content of the room. (Example: In the case cited above, the selection would be size No 1 which has a heating capacity of 3,000 cubic feet.)

## PREPARATORY WORK FOR IN-BUILT TYPE:

For initial installations the Builder should complete his usual work on the flue and the fireplace and must leave an opening through the hearth for the inlet of air, such opening preferably being covered with wire mesh not less than 1 in. mesh to prevent the entry of foreign material. An adequate supply of fresh air should usually be available at this point of entry in the type of appropriate dimension to the outside wall. In the case of the pipe should be fitted with a cover in order to ensure a positive and consistent air pressure on the heating unit. The conveyance of heat to other rooms is by means of an additional preparatory work if it is merely a matter of involuntary circulation through connecting doors. But where it is required to convey heat through a wall at the rear of the unit, the specification must provide for the NEW Wonder-Heat to be supplied with supplementary outlet, connecting pipes and grille. If the NEW Wonder-Heat is required to provide warmth for other more distant rooms, it will be necessary to specify the install additional grilles and transmitting ducts for connection to the heating unit.

## INSTALLATION OF IN-BUILT TYPE:

(1) The NEW Wonder-Heat is delivered ready to install and complete for immediate operation. An instruction card is issued with each unit and the directions can be followed by any competent tradesman. After the Builder has finished the surfaces of the fireplace, surrounds and hearth,

the unit is simply inserted in the fireplace opening, the flue end front being pushed tight against the vertical face of the fireplace surround. When the unit is in position the space between the casing and the bar at the base must be filled with loose sand to prevent air loss. The weight of the unit is sufficient to hold it in position.

(2) Where the NEW Wonder-Heat is not to be fitted into an old style fireplace, any difference between the size of the unit and the available opening is overcome by fitting extra panels of steel or fibro cement. A great diversity of openings has been successfully treated in this manner. Apart from the necessity to remove any impeding material, such as brick hole grates, etc., the method of installation is similar to that set down in (1). The cost of replacing old-style grates with the NEW Wonder-Heat will be quickly offset by the considerable operating economy effected.

## INSTALLATION OF CONSOLE TYPE:

Installation of the Console type requires only the provision of an elbow (with a trap for Siphoning) connecting up to the back of the unit and leading on to a flue or iron flue, for the purpose of conveying smoke and fumes from the unit up the chimney or exterior wall or the wall cavity. Provision should be made for the entry of outside air as in the case of the In-Built type. Where there is no hearth it is sometimes required that the "console" medium be mounted on a base of brick, cement tile or other non-inflammable material.

## OPERATION:

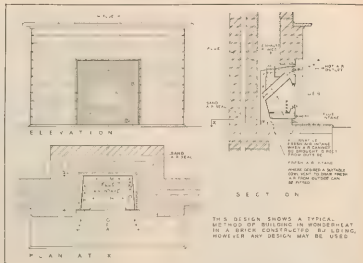
The NEW Wonder-Heat is lit and fed in exactly the same way as an ordinary fire, but it has these important differences in operation. Being particularly sensitive to draught, which is regulated by adjustments to the damper and ash pan position, it can be banked or brought up to full load conditions in a few minutes. It burns any type of fuel—bituminous, soft coal, hard or soft wood, coke, native peat, briquettes—or a mixture of any of these in quantities limited only by the capacity or grate. It ignites readily and keeps alight as long as there is fuel for it to burn, and it can be left unattended in perfect safety for long periods.

# INSTALLATION DETAILS

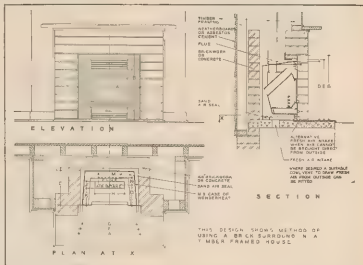
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## IN-BUILT TYPE BRICK CONSTRUCTION

MINIMUM SPACING, INCHES FOR IN-BUILT TYPE			
SIZE NO.	WIDTH	DEPTH	HEIGHT
1	24"	14"	24"
2	24"	18"	24"
3	24"	24"	24"
4	24"	30"	30"



## IN-BUILT TYPE TIMBER CONSTRUCTION



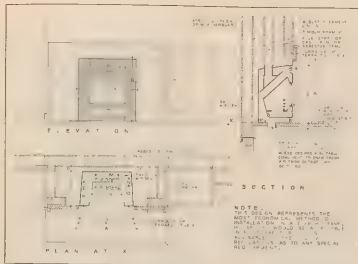
## DIMENSIONS AND CAPACITIES

SIZE NO.	CAPACITY Cu. Ft.	DIMENSIONS — IN-BUILT TYPE											
		A	B	C	D	E	F	G	H	I	J	K	L
1	3000	25"	26"	4"	23"	24"	23"	24"	3"	7"	1"	9"	3"
2	4000	25"	29"	4"	26"	27"	23"	22"	12"	3"	7"	1"	9"
3	5500	34"	29"	18"	26"	27"	29"	26"	5"	3"	0"	2"	14"
4	7000	36"	32"	18"	30"	30"	29"	28"	15"	4"	0"	1"	12"

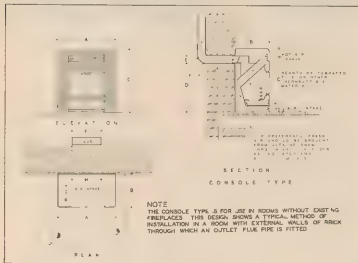
† REPRESENTS THE VOLUME OF THE ROOM IN CUBIC FEET

# INSTALLATION DETAILS

35  
8



IN-BUILT TYPE  
TIMBER  
CONSTRUCTION  
(Alternative)



CONSOLE TYPE  
BRICK  
CONSTRUCTION

S.W. NO.	CAPACITY CU. FT.	DIMENSIONS - CONSOLE TYPE							
		A	B	C	D	E	F	G	H
1	3000	24"	14"	28"	17 1/2"	3 1/2"	9 1/2"	12"	3"
2	4000	24"	14"	28"	20 1/2"	3 1/2"	9 1/2"	12"	3"
3	5500	30"	18"	32"	23 1/2"	4 1/2"	12 1/2"	15"	3"
4	7000	30"	18"	32"	23 1/2"	4 1/2"	12 1/2"	15"	4"

REPRESENTS THE VOLUME OF THE ROOM IN CUBIC FEET

## DIMENSIONS AND CAPACITIES

# Industrial Systems . . .

## APPLICATION:

Wonder-Heat Industrial Systems are successfully used for space heating in Schools, Factories, Theatres and other large buildings where comfort-heating is desired up to temperatures of 65 deg. F.; and for drying or process heating at temperatures up to 200 deg. F.

Where large numbers of people are gathered together in enclosed buildings, the Wonder-Heat Industrial System provides the most economical and efficient method of conditioning the atmosphere with warm, fresh air of normal oxygen content. In auditoriums, hospitals and public buildings, it fulfils perfectly the secondary requirement of complete absence of noise.

In the hot summer months the type "B" installation can be used alternatively for circulating fresh outside air through the ducting system, thus preventing the lower human efficiency which results from a vitiated atmosphere within workrooms, schools, etc.

## GENERAL DESCRIPTION:

Heating units for Wonder-Heat Industrial Systems are of two types, i.e., "A" and "B." There are four standard sizes of type "A" and two of type "B." Type "A" is a self-contained unit which is installed in the room or space to be heated and operates in the same way as the home units. It may be used singly or in multiples, according to the output desired. The largest model of type "A" has an output of 140,000 B.T.U. Type "B" is designed for "remote" installation and is used in conjunction with a centrifugal fan which forces outside air into the heating unit and through a ducting system to outlet grilles, which are spaced as required. The largest of the two type "B" models has an output of 350,000 B.T.U., and models of this type also may be used in multiples where necessary.

All the unique features of the NEW Wonder-Heat Home units also characterise the Industrial units, the only exception being in the outside casings, which do not require the same perfection of line and finish.



Wonder-Heat industrial unit (Type "A") installed in a machine shop which is warmed by fresh outside air being drawn through the heating chamber and ejected through the louvres at top.

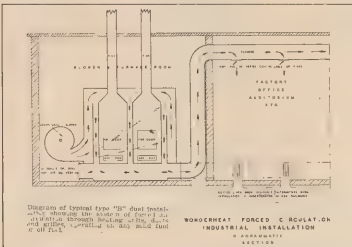


Diagram of typical type "B" dust installation showing the system of forced air circulation through heating unit, ducts and grilles, circulated air and fresh air in all flow.

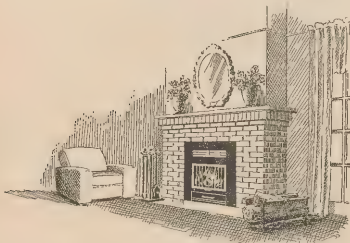
## INSTALLATION AND OPERATION:

Installation and operation of the Wonder-Heat Industrial System is much simpler and less costly than with other systems using gas, electricity, water or steam. Type "B" models are particularly flexible as they may be remotely located in basements or outside buildings with a minimum of weather protection, and the transmitting ducts may be built on the outside or inside walls or within the wall cavities or ceilings. These models may also be adapted for oil firing.

Operation of the Wonder-Heat Industrial System requires no specially trained or qualified attendants. It is just as simple to operate as the Home unit and has the same high degree of thermal efficiency, combustion control and safety. Full temperature operation is attained within 20 minutes of lighting up.

# COMPLETE ARCHITECTURAL UNITY

35  
8



## *Scientific Fresh Air Heating*



- Diagram at left shows how the FRESH AIR is drawn from outside, heated through the scientifically designed combustion chamber and circulated into the room at a rate sufficient to replenish the inside atmosphere four times every hour of burning.

THE NEW  
**Wonder-Heat**  
Air - conditioning FIRE

A REMARKABLE *Call-Australian* INVENTION . . .

Manufactured in four States, viz., Victoria, New South Wales, South Australia, Western Australia, and in New Zealand

Standardised under a Central Bureau and distributed throughout all States of the Commonwealth and in New Zealand

ENDORSED BY THOSE WHO KNOW

State Electricity Commission of Victoria, as follows.

"The Wonder-Heat supplies a definite circulation of fresh air. Approximately 8,000 cub. ft. per hour, sufficient to fill the room more than three times, issues from a grille just below the mantelpiece as a warm rising current.

In addition to this indirect heating, direct radiation from the fire also takes place, the transparent door panes preserving the appearance of an open fire. The complete enclosure of the fire prevents ash blowing into the room and assures safety from sparks.

The Wonder-Heat is particularly sensitive to draught, which is regulated by adjustments to the ash-pan position. The fire can be banked or brought up to full load conditions in a few minutes. Easy removal of the ash is facilitated by the provision of a properly designed ash-pan.

To heat an average sized room, such as the heater was tested in, with briquettes, costs approximately one-half penny per hour. We have also investigated certain Wonder-Heat installations designed for factory heating, and have found them to perform most satisfactorily with ridiculously low briquette costs."

Housing Commission.  
Public Works Department.  
Health Department.  
Railways Department.  
State Electricity Commission of Victoria  
Doctors, Sanatoriums and Hospitals  
Architects and Builders.  
Schools, Hotels, Clubs, etc.

Supt. Greenvale Sanatorium: -

"Since the installation of the Wonder-Heat Fire at my quarters I am besieged by visitors for information. I should be extremely pleased if you could supply me a small packet of your cards or brief literature, which I could hand to those interested. You will gather that I am more than happy with the comfort of my Wonder-Heat."

Domestic Users:

"... and you can shut your windows and doors and yet breathe in the room the fresh air that prevails outside."

"... I estimate that it paid for itself within two years in the saving of fuel effected." Etc., Etc.

SERVICE

There is virtually nothing in the NEW Wonder-Heat to wear or burn out and, with ordinary usage, it should give many years of service and satisfaction. If, through misuse or accident, replacements should become necessary, however, spare parts will be supplied through authorized distributors and agents.

Architects, Engineers and Builders are especially invited to keep themselves informed of the most up-to-date Wonder-Heat applications. Full particulars, demonstrations and supplementary literature will be made available to them through State Distribution, who also have at their disposal the services of a Central Bureau of Research.

DISTRIBUTED THROUGHOUT AUSTRALASIA

By the following Associated Companies

N.S.W. & QUEENSLAND: Licensed Manufacturers.

A. E. Goodwin Ltd.,  
Windsor Road, St. Mary's.  
Tel: St. Mary's 561 (Dial B 091).

NEW SOUTH WALES: Distributors.

H. F. Hudson Pty. Ltd.,  
352 Kent Street, Sydney  
Tel: M 2370, M 2379.

QUEENSLAND: Distributors.

Vendex Pty. Ltd.,  
99-101 Edward Street, Brisbane.  
Tel: B 3965.

SOUTH AUSTRALIA: Distributors.

Australian Joinery Ltd.,  
17-21 Start Street, Adelaide.  
Tel: Cen. 1534.

WESTERN AUSTRALIA: Licensed Manufacturers.

Domestic Appliances Pty. Ltd.,  
452 Murray Street, Perth.  
Tel: B 2429, B 2439.

TASMANIA: Distributors

Wm. Crosby & Co. Pty. Ltd.,  
119 Colliers Street, Hobart.  
Tel: Hob. 6548.

Wm. Crosby & Co. Pty. Ltd.,  
32 Charles Street, Launceston.  
Tel: Laun. 399.

NEW ZEALAND: Licensed Manufacturers and

Distributors,  
Speedway Products,  
51 Albert Street, Auckland.  
Tel: 32-120.

VICTORIA:

WONDER-HEAT COMPANY

(Patentees, Manufacturers and Distributors)

254 Auburn Road, Hawthorn, Melbourne, Victoria.

Tel: WA 2598; WA 2317.



**FUEL OIL  
SECTION**

SECTION  
**36**  
SECTION

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CATALOGUES 1 and 2

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# OIL FUEL

**THE  
APPLICATION OF OIL FUEL  
FOR  
DOMESTIC & INDUSTRIAL PURPOSES**

MARKETED IN AUSTRALIA

by

SHELL CO.  
OF AUSTRALIA  
LTD.

COMMONWEALTH  
OIL REFINERIES  
LTD.

VACUUM  
OIL CO.  
PTY. LTD.

ATLANTIC UNION  
OIL CO.  
LTD.

# OIL FUEL PROGRESS

## PHENOMENAL PROGRESS OF OIL FUEL

During the past three decades oil fuel has made more progress and has developed more uses probably than any other single commodity known to our modern civilisation. Starting late in the 19th Century with crude attempts to utilise what was, until then, a waste product, Oil Fuel first came into real prominence when it was adopted as the standard fuel for the British Navy and a large percentage of the world's merchant tonnage followed suit. Concurrently, oil was used for locomotive firing and for other

The object of this series of articles is to offer reliable information on the modern domestic applications and on some of the numerous industrial uses of Oil Fuel. An outline is also given of the methods of production and refining of Oil Fuel in the belief that this will be of general interest.

## REASONS WHY OIL FUEL HAS BEEN ADOPTED

The progress outlined above has been achieved purely because in so many cases oil, when properly applied with modern apparatus, offers the ideal combination of all those qualities which are looked for in a fuel.

### (a) Installation Cost:

This naturally depends on individual circumstances, but, generally speaking, in all but the smallest jobs, oil is more than competitive with any alternative fuel.

### (b) Installation Convenience:

To the architect this is a most important factor. Reference to the section on storage and handling will show that virtually no storage space is required, since the fuel tank is underground and no means of access for supplying fuel or removing ashes need be provided. This gives the architect an entirely free hand in

industrial purposes. After the First World War it became apparent that oil offered vast possibilities for domestic heating and similar small applications, on account of the ease with which it could be handled, and the possibility of subjecting it to automatic control. Developments along these lines were successful, and at the present time there are literally millions of domestic oil burners in use throughout the world, while oil is also used as a fuel in practically every industry where heat is required.

Oil Fuel are gas and electricity. Oil fuel, however, is very considerably cheaper, as can be simply shown by working out the comparative fuel costs for, say, 100,000 B.T.U.'s. In the table, the efficiencies to be allowed for are those which would be obtained under average conditions, as for instance, in a small hot water boiler. After allowing for the varying prices, it will be found that for gas and electricity the costs per 100,000 B.T.U.'s are very much higher than the corresponding cost of Oil Fuel.

Compared with good quality solid fuels at ordinary prices, the cost per unit of heat in Oil Fuel is higher. However, the combustion efficiency of Oil Fuel is, naturally, much better than that of solid fuel; and because of the accurate control achieved with Oil Fuel, very little heat is wasted. As a result the fuel bill is often quite comparable with solid fuel costs. As modern

Fuel	Price	Calorific Value	Cost per 100,000 B.T.U.'s	Efficiency	Cost per 100,000 B.T.U.'s
Oil	185/6 per ton	19,500 B.T.U./lb	5.44s	80%	6.80s
Coal	50/- per ton	11,500 B.T.U./lb	2.44s	85%	2.85s
Gas	5/- per 1,000 cu. ft.	360 B.T.U./cu. ft.	12.5s	85%	14.7s
Electricity	1d. per unit	3,412 B.T.U./unit	29.4d.	85%	34.6d.

There is a very wide range in the quality of solid fuels. Thus, first quality black coal may have a calorific value of 11,500 B.T.U.'s per lb. and contain little ash, but, brown coals having high water and ash contents may be below 8,000 B.T.U.'s per lb. Although reasonably dry woods may yield 4,500 B.T.U.'s, the calorific values of other wood fuels may be appreciably lower.

Figures for these fuels have, therefore, been included.

arranging the basement layout, and he is able to make the best possible use for other purposes of all the space that is available. Moreover, in the case of a central heating installation, for instance, the boiler itself is usually smaller than with an alternative fuel, so this again gives an appreciable saving.

### (c) Operating Cost

The only other heating media which are capable of giving the same fully automatic operation as

oil burners are available to give fully automatic control, very considerable savings in labour costs are possible in installations burning Oil Fuel. The decision concerning the type of fuel to be used can, therefore, only be made after consideration has been given to many factors. The combination of the fuel economy and flexible control of oil firing has resulted in low overall operating costs, and accounts for the increasing popularity of Oil Fuel installations.



WESLEY COLLEGE, MELBOURNE  
Oil-fired heating range, griller and steam boiler are installed, steam being used for central heating, domestic hot water, steam cooking, and drying rooms.

THE UNIVERSAL FUEL

OIL FUEL

Each of the Oil Companies concerned has a Technical Service Department, staffed by competent and fully equipped engineers. Architects and all others interested in the use of Oil Fuel are invited to make full use of the technical service thus offered. It need hardly be said that this service is free of charge and entails no obligations.

# OIL FUEL FACTS

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1

## REASONS WHY OIL FUEL HAS BEEN ADOPTED (Continued)

### (d) Operating Convenience:

Since oil-fired central heating or hot water equipment is usually fully automatic in operation, it offers everything that can be desired in this respect. Many plants are locked away in their boiler rooms where they give faithful service, unseen and unheard, month after month, subject only to a periodic routine inspection. Where hand control is required as,



MODERN AUSTRALIAN REFINERY  
View of section producing oil fuel

for instance on a cooking range, the control is simplicity itself. Such hand controlled burners are available in detail in a later section.

### (e) Operating Efficiency:

Oil fuel offers any desired fineness of control, subject only to the sensitivity of the control instrument used. Thermostats operating on a differential of plus or minus 1 deg. F. are readily available and this is a much smaller variation than is usually required. Where hand control is used, the control can, if necessary, be made so that it will give almost a micrometer adjustment.

### (f) Cleanliness:

Oil fuel flows invisibly through pipes and never appears until it is ultimately sprayed into the combustion chamber where combustion is complete and smokeless. The degree of cleanliness, therefore, is 100 per cent. The slogan,

"Use your Boiler Room as a Play Room" is somewhat out of fashion these days, but its lesson is a valuable one. The absence of grit and ashes is a big factor in maintaining an attractive atmosphere in a building, quite apart from the cash saving which accrues from the reduced amount of cleaning and painting that has to be done and the reduced depreciation of furnishings or of equipment in the vicinity of the boiler house.

### (g) Silence:

A properly installed oil burner is completely silent, or almost completely silent, depending on the type of burner (domestic oil burners must not be confused with certain old-fashioned industrial burners which produce quite a considerable roar).

### (h) Reliability:

The only attention required by an oil burner is the routine service inspection mentioned above. Breakdowns are so very rare that when they do occur they are apt to receive an entirely disproportionate amount of publicity.

### (i) Safety:

Oil Fuel, having had all the volatile and inflammable spirit removed from it, is quite safe from any fire hazard. Insurance companies accept buildings containing properly laid-out Oil Fuel installations without any increase in premiums.

### (j) Reliability of Fuel Supply:

It is unwise to predict the future trend of this world's affairs, but it can at least be said that the Australian supply has been maintained for a period of over thirty years which includes two World Wars. This is in marked contrast to conditions which apply in certain other fuel-supplying industries.



OIL-FIRED KILN WITH ROTARY BURNER  
used in the manufacture of Plaster of Paris, Dry Creek  
Plaster Works, S.A.

ADAPTABILITY

OIL FUEL

# OIL FUEL REFINING

## REFINING OF CRUDE OIL AND THE PRODUCTION OF OIL FUEL

Crude oil, as provided by nature, is a heterogeneous mixture of many substances and, in its original form, it is usually quite unsuitable for any practical use. Its components range from methane and other hydrocarbons which are gases at all ordinary temperatures, down to solids such as bitumen. In between are those liquids which ultimately emerge in the form of petrol, kerosene, lubricating oil, etc.; usually dirt and water are also present.

The proportion in which these components occur varies widely. Some wells, for instance, produce nothing but natural gas. The opposite extreme is provided by the Trinidad Lakes, which are deposits of pure bitumen.

### FRACTIONAL DISTILLATION

The principal feature of difference between the various fractions contained in the crude is that of boiling point or volatility, and this provides the key to the method of separation. If a crude is heated steadily, the lighter fractions will boil off first, followed progressively by heavier and heavier fractions until nothing remains but a sticky or solid residue. Each fraction as it boils off can be collected and condensed. This principle of progressive distillation forms a basis of refinery practice. Alternatively, the whole of the volatile fractions of the crude, which are required to be separated, can be evaporated together and then steadily cooled. The heavier fractions obviously will condense first and will be followed by lighter and lighter fractions, and, if these fractions are collected as they condense, this will provide an equally effective separation. This principle of progressive condensation is more suitable to continuous output than is progressive distillation.

Oil Fuels are often referred to as "Crude Oil." Nothing could be further from the truth, for these fuels are carefully refined products, very different from crude oil. Below is given a brief description of the nature of crude oil and of the way in which various grades of fuel are produced from it.

Broadly, the fractions which are collected, in order of their volatility, are:—

- (a) Light Fractions. These, after further separation and treatment, provide special boiling point spirits, solvents, etc.
- (b) Motor Spirit, and
- (c) Kerosene. These also need further treatment before they are marketable.
- (d) Diesel Distillate. This is a very light grade of oil fuel and will be referred to later.
- (e) Diesel Fuel.
- (f) Residue. This is the residue which is not distilled off, but which remains after the removal of the above lighter fractions.

### NATURE OF RESIDUE

The nature of the residue depends on the original nature of the crude and on the amount of Diesel Distillate and Diesel Fuel which has been taken out. It may, after cleaning to get rid of dirt and impurities, be immediately suitable for use as a medium or heavy fuel oil. Alternatively, it may be used as the basis for further refining to produce lubricating oil and other products.

The Diesel Distillate and Diesel Fuel similarly may be marketed as Diesel Fuel, or it may be broken down chemically to produce further supplies of motor spirit and a residue, which residue in turn is available as fuel oil. Alternatively, these may be used for blending with a residue to produce any desired grade of fuel oil.

It will be evident that a wide variety of fuels can be produced. Refinery practice is very flexible and, by suitably regulating the refinery or by blending different fuels, standard fuels are produced, which conform to specified requirements, depending on the purpose for which they are intended.



ROYAL SYDNEY GOLF CLUB

Automatic oil fired boilers used for hot water supply and radiation

UNVARYING QUALITY

OIL FUEL

Oil Fuels vary widely in their properties, and the selection of the correct grade for any burner or engine is just as important as, for instance, the selection of the proper lubricating oil for a high speed engine.

# OIL FUEL GRADES

36

1

## GRADES OF OIL FUEL

There are three main grades of oil fuel, which are described below.

### Diesel Distillate:

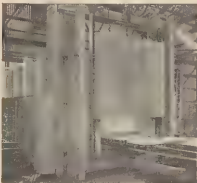
This, as its name implies, is a pure distillation product, it is clean, pale in colour, practically transparent, very free flowing and has a low Cold Test (i.e., it remains liquid even at very low temperatures). Its main uses are for high speed diesel engines, where a very pure and very carefully refined fuel is required, and for natural draught vaporising burners which will be described later.

Diesel Distillate is also often referred to as Distillate Fuel, Gas Oil, and by other names. To avoid confusion, it should always be purchased by its brand name. The fuels in this class, which are marketed in Australia, are:—

C.O.R. Light Diesoleum	Vacuum Standesol	Atlantic Distillate	Shell Diesoline
---------------------------	---------------------	------------------------	--------------------

### Industrial Diesel Fuel:

This is the grade of fuel which is normally used for central heating and for most ordinary industrial purposes. It is black in colour and opaque, but is free flowing and has a satisfactory low Cold Test. It is not a pure distillation product, and, if boiled off, it would leave a solid residue. This residue, however, does not imply that solids are present as such in the fuel, since most of it is produced by the cracking or chemical breaking down of liquids as the temperature rises. It is possible for such solid substances as wax and asphaltic materials to be present in the fuel, but these are in solution in the oil and, therefore, behave as liquids. The amount of actual solid or incombustible impurities, which would be separated by even the finest filtering, is a mere trace.



An oil-fired vitreous enamelling furnace, used in the manufacture of cooking range parts, etc. Metters Ltd., Perth

Various standards associations have issued specifications which indicate what properties an industrial Diesel Fuel should have. These specifications serve an admirable purpose, but the user must not lose sight of the fact that the ultimate object is to secure a fuel which will give satisfactory results in the burner concerned. It is possible for a fuel to meet a standard specification, yet still have some minor peculiarity which would make it unsuitable. Reputable Oil Companies, therefore, apart from maintaining their fuels to satisfactory specifications, also make sure that these fuels will actually give the best possible results when handled in equipment which is normally used by customers. This being the case, the customers' best guarantee of satisfaction is to buy to a brand name and not to a specification. The brands of fuel marketed in Australia are:—

Vacuum Stanvac Diesel Fuel	Atlantic Diesel Fuel	Shell Diesel Fuel	C.O.R. Light Fuel Oil
----------------------------------	-------------------------	----------------------	-----------------------------

Industrial Diesel Fuel, as its name implies, is the fuel which is marketed for use in diesel engines, other than those small, high-speed engines for which the recommended fuel is a distillate. The Diesel Fuels marketed in Australia are:

Atlantic Diesel Fuel	Shell Diesel Fuel	C.O.R. Diesel Oil	Vacuum Stan Vac Diesel Fuel
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### Fuel Oil:

Fuel Oil is also known as Furnace Oil, Boiler Fuel and Bunker Fuel. It is usually a heavy residue of a nature somewhat similar to Diesel Fuel, but more viscous, having a higher pour point or cold test and containing higher percentages of impurities. A very wide range of fuels is sold under this heading in various parts of the world and the properties of these fuels vary accordingly. Because of its high viscosity and high cold test, it is often necessary to heat it in the storage tank to enable it to be pumped. It is also essential to provide adequate heating, pumping and filtering arrangements for handling the fuel between the storage tank and the burner, and to have the whole system under competent supervision.

For these reasons, Fuel Oil is quite unsuitable for use in automatic burners, or, in fact, for any domestic purpose, and its field of application is limited to marine boiler firing and to very large industrial plants.

Fuel Oil, as the term is understood in Australia, must not be confused with Furnace Oil as understood in the U.S.A. In the U.S.A., very light distillate fuels, often almost as light as kerosene, are classed as furnace oils, and such fuels are not marketed in Australia.

RELIABILITY

OIL FUEL

# OIL FUEL DELIVERY

1

## DELIVERY OF OIL FUEL

Delivery can be made by any of three methods, depending on the location and on the quantity of fuel required.

### Bulk Road Waggon:

This is the usual method of delivery in metropolitan areas. The average road waggon has a capacity of 900-1500 gallons and is equipped with an engine driven pump and 40 ft. of flexible hose, terminating in a 2 in. B.S.P. female coupling, so that delivery can readily be made to any ordinary location whether the storage tank is underground or above ground. It is not necessary for a customer to take a full waggon load. Deliveries of smaller quantities can be made, but it is more convenient both for the purchaser and the supplier if reasonably large deliveries are taken.

### Rail Tank Cars.

These are used for delivering relatively large quantities in country areas. Each car has a capacity of 3000-5000 gallons (about 12 to 20 tons) and has two outlet points—one each side, but is not equipped with pump or hose, so that it is necessary for the customer to make his own arrangements for taking delivery. Each customer must take a full car-load because it is unsafe to haul partly-filled cars on the railways on account of surging of the fuel.

### DRUMS:

Drums are generally 44 gallon capacity, though other sizes are used occasionally. They represent the most convenient way of buying in small quantities, whether in city or country areas, but the price is

As a part of their policy of giving service to their customers, the oil supplying companies have developed methods of delivery which offer the best possible combination of efficiency, economy, speed, and convenience, and they are always on the alert to maintain the high reputation of this service.



In the modern Sydney home, an oil-fired water heating unit provides for all household requirements.

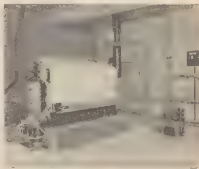
slightly higher on account of the extra cost of cleaning, filling, handling, weighing, maintaining and replacing drums.

Within specified metropolitan areas, which are quite extensive and include all suburbs, delivery in bulk road waggon and in drums is free. For other areas, supplies are made in rail tank cars or in drums, i.e. main installations, freight being for customer's account, or, alternatively, drums can be picked up by the customer at numerous country depots or delivered ex those depots at prices which are higher than metropolitan prices by an amount equal to the actual extra cost involved.

Each customer can readily determine for himself the most satisfactory and economical method of purchasing.



UNDERFIRE MULTITUBULAR HOT WATER BOILER fired by fully automatic pressure jet burner. Ozono Theatre, Genoa, S.A.



THEATRE HEATING APPLICATION. Cast iron sectional hot water boiler, fired by rotary burner.

CLEAN AND CONVENIENT DELIVERY

OIL FUEL



An oil fuel storage system is elementary in its simplicity and, if laid out intelligently, and the pipe work properly fitted, no trouble whatever need be anticipated.

# OIL FUEL STORAGE

36

## OIL FUEL STORAGE AND HANDLING

It is essential that a system should conform to the regulations of the Fire Underwriters or of any other body that may have jurisdiction over the premises concerned. No hardship is imposed in conforming to such regulations, since they merely represent sound engineering practice and they are, in fact, a useful guide as to the lines on which a system should be laid out. In this connection the Standards Association of Australia have published a code for oil fuel installations, copies of which may be obtained from the offices of the Association in the various capital cities. The Fire Underwriters Regulations are available free from the Authorities concerned. Where, due to special local circumstances, it is desirable to depart from the regulations, permission to do so can be obtained provided that safety is not being sacrificed. Such permission, however, must always be obtained in writing. The minimum economic tank size for a bulk installation is 500 gallons, but frequently larger tanks are necessary.

The following notes give brief descriptions of the three types of storage system which are generally used.

### Supply in Bulk—Underground Tank—Pump Feed to Burner:

This layout is shown in figure 1 and is the system generally used for central heating and similar purposes. The underground tank may be outside or inside the building, but the filling point must be outside and suitably protected when not in use. The contents of the tank can be gauged at any time by a dipstick inserted through the filling connection or through a special connection provided for the purpose. When the burner is running, fuel is drawn from the tank by the suction pump incorporated in the burner, the suction pipe terminating in a foot valve and strainer at a level of 3in.—6in. above the bottom of the tank. This allows ample space for the collection of any dirt or sediment that might get into the tank, without any risk of it being drawn into the burner. This suction pump draws a generous supply of fuel, more than sufficient for the requirements of the burner, and the surplus is returned to the tank via a spring-loaded valve and return pipe.

### Supply in Bulk, Underground Tank, Overhead Service Tank, Gravity Feed:

This type of system, shown in figure 2, is commonly used for industrial purposes. The arrangement of the storage tank is identical with that described previously,

but, instead of a suction pump drawing supplies of fuel direct to the burner, a manually or power operated pump is fitted and this delivers fuel as required to an overhead service tank. From this service tank, fuel is fed by gravity to the burner. The service tank usually has some form of gauge to indicate the amount of oil contained in it and it also requires to have an overflow pipe leading back to the main storage tank.

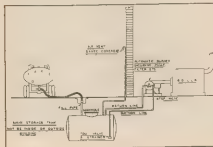


THE CONSERVATORY, FITZROY GARDENS, MELBOURNE.  
The essential temperature control is met by an oil-fired gas bar.

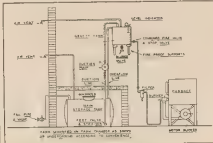
### Supply in Drums—Overhead Tank—Gravity Feed:

This type of system is used for small installations, whether domestic or industrial. It differs from the service tank arrangement described above in that no main storage tank is included, but supplies of fuel are pumped from drums to the overhead tank, as required. It is necessary for the tank to have an overflow pipe leading away to a safe place, visible to the man operating the pump, to guard against risk of overflowing.

Obviously, any of the above systems can be used for supplying quite a number of burners, and variations in these systems are possible. For instance, if burners were located in different parts of a building, it might be desirable to have more than one service tank, each service tank supplying its own burner or group of burners, but being filled from the same main storage tank.



1. DOMESTIC OIL FUEL STORAGE SYSTEM



(2) INDUSTRIAL OIL FUEL STORAGE SYSTEM

EFFICIENT and ECONOMICAL LAYOUT

OIL FUEL

# OIL FUEL BURNERS

A burner is a very small piece of equipment when compared, for instance, with the heating system which it serves, but the functioning

(Continued on Opposite Page)

## OIL FUEL BURNERS AND COMBUSTION CHAMBERS

### Natural Draught Burners:

In this type of burner, which operates most satisfactorily on a distillate fuel, the fuel is fed to a vaporising pot or dish, to which is admitted a limited supply of air. On lighting up, which is usually done with a scrap of paper or cotton waste, the fuel burns at first with a slow, smoky flame. Very soon, however, the heat from this flame causes the fuel to start vaporising freely and, subsequently, the primary air jets, impinging into this atmosphere of vapour, bring about burning with a clear blue flame and smoking ceases completely. The primary air is not nearly sufficient for complete combustion and the unburned fuel vapours emerge from the top of the vaporising pot and there meet a further supply of air with which combustion is completed. The main part of the flame is thus outside the vaporising pot and may be blue or yellow in colour, depending on the burner and on the size of the flame. The size of the flame is adjusted by regulating the oil supply.



A bakery in an unusual setting. Stockdale's Bakery, Stn. Yarra, Vic., equipped with the latest oil-fired ovens.

Such burners are simple and inexpensive; they have no moving parts and no electric power is required to operate them. Thus they are particularly useful for medium to small hot-water services, cooking ranges, sterilisers, small boilers, etc.

The fuel used must be a Distillate, otherwise a residue will be left in the vaporising dish and this will accumulate and ultimately choke the burner. Even with a Distillate Fuel, some residue may be left in the form of soft carbon and, therefore, it is necessary to clean the burner occasionally, perhaps once a year. This cleaning operation is very simple, since the vaporising pot lifts straight out without having to undo any screws and it can be cleaned in a few seconds.

Certain alternative types of burner admit all the combustion air to the vaporising dish so that combustion is much fiercer and the vaporising dish reaches a higher temperature. This has the effect of causing more rapid formation of carbon, but the high temperature and the plentiful air supply ensure that this carbon burns away as quickly as it forms. Burners of this type are not completely silent in operation, as is the type described above, but burn with a faint characteristic combustion roar.

These burners require to be lighted manually, but, subsequently, can be controlled manually or automatically.

### Power-Operated Domestic Burners:

This class of burner, which handles a standard grade of oil fuel, relies on spraying the fuel into the combustion chamber, usually lined with fire brick, in the form of a very fine mist or spray. Each minute drop of fuel burns in suspension and, although a carbonaceous residue results, the residue from each minute drop of fuel is so small that it in turn is completely burned away by the heat of the flame before it has time to be deposited on the combustion chamber surface. Thus, there is no unburned residue whatever.

The main function of the burner is to atomise the fuel, and this may be done in any of four ways: -

#### (a) Pressure Jet

Fuel is supplied to the burner nozzle under a pressure of 80/120 lbs./sq. in. and is delivered, with a rotary motion, to the outside of a small whirlpool chamber. In this chamber it proceeds towards the centre, rotating more rapidly as it goes, and ultimately issues from a circular orifice in the middle. At this stage its speed of rotation is almost incredibly high, being of the order of 1,000,000 r.p.m., and, as soon as it leaves the orifice, the centrifugal force due to this rotation bursts it up into the required fine spray.

#### (b) Air Jet

The jet of fuel supplied under a very low pressure, is turned into the required fine spray by being directed into a jet of high velocity air. The air pressure may vary from about 4 ozs. up to 80 or 100 lbs. For domestic burners, a pressure of from 2 to 4 lbs. is usual.



T. & G. BUILDING, SYDNEY.  
Equipped with oil-fired air-conditioning and hot water service

ECONOMY

OIL FUEL

of the whole system so obviously depends on the burner that it is essential that the burner should be of high quality, correctly chosen as to type and size, and efficiently installed.

# OIL FUEL BURNERS

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## OIL FUEL BURNERS AND COMBUSTION CHAMBERS

### Power-Operated Domestic Burners (Cont.)

#### (c) Steam Jet

The principle is identical with the air jet burner, except that steam is used instead of air.

#### (d) Rotary

Fuel is fed to the inside of a hollow, rotating cone, which may be motor driven, or driven by a small air turbine. The fuel flows along the length of this cone and is thrown off from the large open end in very small drops, which are picked up and carried into the combustion chamber by a suitable air stream.

Apart from atomising the fuel, the burner also requires to provide the air, which is necessary for combustion, and also some means of igniting the fuel. A domestic burner unit therefore incorporates not only the nozzle, but also the electric motor, which drives the oil pump, air compressor, if necessary, and air fan. The ignition device (which may be gas, high tension electric spark or a combination of these) is included, as also are such valves, filters, etc., which may be necessary. The control panel may be included as part of the unit, or it may be fitted adjacently, and such control instruments and safety devices as are required are connected to this panel.

### Power-Operator Industrial Burners.

For industrial work and for large central heating plants, the burners used are identical in principle with those described above, but are naturally on a bigger scale. Also, it is usual to keep the oil pumping equipment and similar auxiliary apparatus separate from the burner, though they can be combined in the one unit if necessary. Also automatic controls are not generally used.

Whereas, for domestic burners, the pressure jet and air jet principles, the latter employing air at 2 to 4 lbs. per sq. in. pressure, are most common, for industrial work, air jet burners, operating at a

pressure of 4 to 6 ozs., predominate, though rotary burners are used quite extensively; while, for large boiler plants, pressure jet burners predominate.

### Self-Generative Burners.

The self-generative burner, one example of which is manufactured in Australia under the name, "Auto Generator," has most of the advantages of an ordinary power-operated burner, but requires no source of external power. It comprises a steam jet burner, to which oil is fed by gravity and which receives its steam supply from a small flash boiler located in the combustion chamber. The flash boiler is fed with water from a closed tank in the top part of which air is compressed by a hand or foot air pump, and thus maintains sufficient pressure to give quite long periods of operation. Burners of this type are particularly valuable for heating portable bitumen kettles and similar applications in road making and construction work.



THE CREMATORIUM, BRISBANE.  
In such surroundings, silence and clearliness are imperative.

### Combustion Chambers

For any burner, a correct design of combustion chamber is essential. The combustion chamber is not merely a space in which a flame is allowed to burn. It requires to have the correct shape, since it influences the flow of air and fuel entering, and the flow of gases leaving, and ensures their proper mixing and distribution. Its refractory surfaces throw heat back into the flame, so ensuring stable and efficient combustion. Further, it permits heat to be distributed properly over the boiler heating surface, but, at the same time, restricts heat flow where no heat is wanted, thus avoiding waste. It can be seen, therefore, that each combustion chamber requires individual consideration, depending on the burner and on the boiler or other apparatus which requires to be heated.



A delightful Australian home, where comfort is assured by an oil-fired central heating system and domestic hot water service.

FREEDOM FROM SMOKE

OIL FUEL

# OIL FUEL

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I

## BURNER CONTROLS

The burner control system is second in importance only to the burner itself, and it is desirable to know what can and what cannot be

*Continued on opposite page.*

### FULLY AUTOMATIC CONTROLS

The control systems used in connection with fully automatic burners as, for instance, for central heating, are remarkably ingenious and give not only complete control but absolute protection against practically any possible fault that might develop in the equipment or in the controls themselves. They are usually relatively simple in operation, incorporating few moving parts, but the wiring system, although permanently soldered up and, therefore, quite proof against trouble, is somewhat complicated in layout and will not be described in detail.

Broadly, the controls used in an average, fully-automatic system, and their functions, are as follows:—

#### (a) Room Thermostat:

When the temperature falls to a predetermined figure, this thermostat switches on, and when the temperature rises by a set margin above that figure, it switches off.

#### (b) Boiler Thermostat:

This functions similarly to the room thermostat, but operates on the boiler temperature.



Boiler burner unit for domestic hot water, and multi-tubular boiler for central heating, both with fully automatic medium pressure air burners. T. & G. Building. Adelaide.

#### (c) Primary Circuit:

When both thermostats are switched on, current flowing through this circuit starts the burner up and, at the same time, switches on the ignition. Fuel and air, in correct proportion, are supplied to the combustion chamber and are ignited by the high tension electric spark.

#### (d) Flue Thermostat or Flame Thermostat:

Normally, this thermostat is in the "cold" position, but, as soon as the flame is properly established, it changes to the "hot" position. This change cuts out the primary circuit, thereby cutting off the ignition, but it establishes the main circuit and thus allows the burner to continue running.

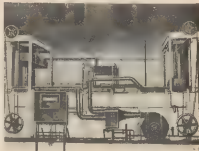
(e) If the flue thermostat should fail to change over, this indicates that flame has not been properly established. The burner will continue to run on the primary circuit, but only for a short period. After this, the circuit will automatically trip out, and requires to be re-set by hand. The fact that this re-setting is required indicates to the owner that some fault has developed, possibly only a very minor one, which requires correction.

(f) Should the flame go out for any reason (which reason might be some purely temporary cause), the flue thermostat will return to the "cold" position and the burner will immediately stop. After a short interval, it will start up again in the ordinary way and, if the cause of failure has removed itself, operation will continue normally. Otherwise, the burner will shut down and will remain shut down until manually re-set.

(g) Should the flue thermostat stick in the "hot" position, the primary circuit is thereby cut out and the burner is unable to start, since it can only start up on the primary circuit and not on the main circuit. Such an arrangement guards against failure of this most essential safety instrument.

(h) Should the electric current fail, the burner will stop immediately and will re-start when the supply is resumed, subject only to the fact that if the supply is resumed immediately the burner will wait until the flue thermostat returns to the "cold" position, thereby giving time for any inflammable gases in the combustion chamber to be cleared away.

(i) Assuming that operation of the burner is normal, and that none of the above unlikely faults has developed, the burner will run until the room or boiler temperature, as the case may be, has risen by a small margin above its set figure. The appropriate thermostat will then cut out and the burner will stop. Thus the burner is alternately on and off for periods depending on the load on the system.



Oil Fired Car type Heat Treatment Furnace—Fully Automatic.

AUTOMATIC CONTROL

OIL FUEL

accomplished by present-day controls, so that full advantage can be taken of the facilities which they offer and at the same time costly mistakes can be avoided.

# OIL FUEL

## BURNER CONTROLS

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### SEMI-AUTOMATIC CONTROLS

The usual semi-automatic control system provides for the burner to be lighted manually, but, after that, the burner will function without attention. If the plant is to be left unattended, a safety device is provided to shut the burner down in the event of any fault developing. This usually takes the form of a flame thermostat, as described above, but in natural draught burners the device commonly used comprises an overflow bucket underneath the vaporising dish. Any fault which could produce dangerous conditions will cause the fuel to overflow from the vaporising dish and into this bucket. As soon as any appreciable amount of fuel accumulates in the bucket, the extra weight causes a trip mechanism to operate and shuts off the fuel supply.

The control system can be either of two types:—

#### (a) Floating:

As the temperature rises, the flame is gradually reduced and vice versa.

#### (b) High—Low:

The burner functions on either a high flame or a low flame, but nothing in between. It changes over from one setting to the other according to the heat requirements of the plant.



Steam boiler with manual ignition semi-automatic control low pressure air burner and automatic feed water regulator. Ever Ready Co. (Australia) Ltd., Sydney.



Cooking range fired by single electric ignition manually controlled medium pressure air burner. Caulfield Grammar School, Vic.

The controls may operate directly on the oil regulating valve, as is usually done in very small burners, or they may operate through some form of relay. With low pressure air burners, pneumatic relays are usual, since the supply of compressed air is readily available. For large central heating plants, hydraulic relays can be used, a small supply of water under pressure being taken from the town main. Alternatively, electric relays are used.

On all but the smallest jobs, the control mechanism operates not only on oil supply but also on the air supply, thus maintaining the correct oil-air ratio over the whole range of the burner.

### MANUAL CONTROL

Manual control is obviously very simple, since only two control handles need be adjusted, those regulating the fuel and the air supplies respectively. On small burners, as used for cooking, for instance, both fuel and air are regulated by a single lever, the ratio between the two being maintained at the correct figure. This lever also operates the electric ignition device, the arrangement being that, as soon as the lever is moved from the "zero" position, the ignition is switched on and, subsequently, any further movement of the lever increases both fuel and air supplies, but leaves the ignition on.

It might be mentioned that in burners of this type, the oil control is accomplished, not by regulating a valve, but by altering the setting of a positive rotary pump; thus any given position of the regulating lever will produce a specified fuel rate, irrespective of the pressure, temperature or viscosity of the fuel.

LABOUR SAVING

OIL FUEL

# OIL FUEL

## COOKING

### HISTORICAL

The change in favour of oil fuel has occurred because certain conditions of temperature control, coupled with economy, cleanliness and convenience have to be met, and the modern development of oil burners has made oil definitely the most satisfactory fuel for the purpose.

It may be of interest to trace briefly the history of cooking practice insofar as the fuel is concerned. In the old days wood and coal were universally used, but to control the temperature with anything approaching accuracy was manifestly impossible. In addition, there was the never-ending dirt and ash that is inseparable from these fuels, together with an excessive amount of heat thrown back into the kitchen, which made for most uncomfortable working conditions.

Gas and electricity provided the immediate solution of these difficulties, since they allow both cleanliness and accurate control and they also permit the oven to be effectively insulated, so giving cool and comfortable working conditions. The cost of gas and electricity on a heat basis, however, is many times that of solid or liquid fuel.

The finer development of the oil burner has offered what appears to be the ideal solution for, when its advantages are considered logically, it will be seen that it leaves very little indeed to be desired.

### QUALITY OF THE COOKING

The first essential, of course, is the quality of the cooking and there appears to be no definite standard against which quality can be measured. It can only be said, therefore, that oil is being used by many of the world's best known chefs in the world's most exclusive hotels, and that they are completely satisfied with it. Many of them, in fact, having once used oil, have expressed great reluctance to revert to any other fuel.



Oil Fuel Stove used by Australian Armed Services.

The earliest applications of oil fuel for cooking were probably in the galleys of the larger passenger liners, where oil fuel was already used for firing the main boilers. Subsequently, oil-fired ranges have been increasingly adopted in hotels, restaurants, boarding houses, hospitals and other public institutions, and are now used in many of the larger private houses. During the Second World War all Australian Armed Services employed oil fuel extensively for cooking and other heating purposes. In time to come, it seems probable that oil fired ranges will be almost universal, except perhaps for the smallest sizes.

### FEATURES

Other features which can be expressed fairly readily in terms of hard facts and figures are as follows:

- (a) **Quick Starting:**  
The oil burner is always ready for duty and can be lit up from cold in a matter of seconds.
- (b) **Reserve Heating:**  
Without sacrificing any other quality, a large reserve of heating power can be provided and this can be used for reaching temperature quickly or for attaining any particularly high temperature that may perhaps be required.
- (c) **Control:**  
The control of an oil burner is perfectly simple and needs no previous experience to work it efficiently.
- (d) **Cleanliness and Silence:**  
These points need hardly be enlarged upon.
- (e) **Economy:**  
There is no waste of fuel, since the burner can be turned on and off just as required and, in actual practice, it has been proved over and over again that substantial savings can be made by using oil.

### Burners and Ranges:

The conversion to oil firing of an existing coal-fired range is not usually difficult. The combustion chamber is suitably bricked up and a firing front plate fitted on which a low pressure air burner is mounted. A refractory slab is laid over the top of the fire box, protecting the range top from too much direct heat, but the rest of the range remains unaltered.

As an alternative to a low pressure air burner, one of the new special cooking range burners can be used, incorporating electric ignition and a single control lever.

When a range is designed and built specially for oil firing, more efficient results are naturally obtained. The oven plates are usually made of rather heavier section and the range as a whole is very carefully insulated, so that all parts except the top plate remain quite cool.

For the smaller types of range, natural draught burners are now being adopted and these also give eminently satisfactory results. Usually, the range is specially constructed to accommodate such a burner, the burner being mounted internally alongside the oven. As in the case of natural draught burners for domestic hot water supply, these burners have the advantages of simplicity and cheapness, and the disadvantage that they operate on a slightly more expensive fuel.

Apart from the ordinary cooking range, highly efficient oil-fired equipment has been developed for grilling, fish frying, pastry cooks' ovens and, of course, for all types of bakers' ovens. Many years' experience with this equipment has proved that oil is equally satisfactory for these purposes. This is natural, since, after all, the operating conditions are in general practically the same as those for an ordinary range.

Where cooking is done by steam, the steam is supplied by a boiler which often serves also the laundry, drying equipment, central heating system, etc. The cooking equipment is quite independent of the fuel used and the problem is simply that of firing the boiler in the most effective way. Boilers of this class are dealt with in a later section.

In the Southern States of Australia some form of central heating system is an obvious necessity in all big buildings and, judging by the trend in other parts of the world, it will not be many years before it comes to be regarded as necessary in private homes also

## OIL FUEL

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## CENTRAL HEATING

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### ADVANTAGES OF OIL FIRING

#### PERFORMANCE

The first essential of any system is that it shall maintain a steady and comfortable temperature, irrespective of weather or other conditions. To achieve this, in a variable climate, the system must be heated by a fuel which gives a high degree of flexibility and accurate control. Otherwise there are bound to be periods when the temperature drops unpleasantly, followed by other periods of overheating as a roaring fire, in an effort to make up the lee-way, over shoots the mark. Oil fuel never produces such conditions, since, if heat is called for, it responds immediately and accurately and adjusts itself to meeting the demand and no more. Thus, apart from providing the comfort which is needed, also tends to economy. Thus oil fuel is the obvious choice for any central heating system, and is practically the only choice for a small system.



3-even, 2-burner cooking range, with grill on left, both fired by electric ignition hand control medium pressure air burners. Wesley College, Melbourne.

#### CONSTANT AVAILABILITY

It is often desirable on occasional chilly days during the spring and autumn to use the central heating system for short periods. Because of the difficulty of attending the starting up of coal or coke-fired boilers, buildings are often left unheated during such cold snaps, but an oil burner can be put into operation merely by the turning of a switch, and heat is thus provided throughout the building in a very short time.

#### CONVENIENCE

Apart from actually doing the job efficiently, oil fuel offers other features which have been referred to previously, chief among them being its ability to operate silently, cleanly and automatically without attention. The only attention required is an occasional telephone call for supplies of fuel, as they

become necessary, and there is no stoking, filling coal hoppers, or cleaning and ash-removing, which labour, when thrust on a householder or his staff, is apt to make him regard his central heating system as a liability rather than an asset.

Little need be said of the obvious desirability of cleanliness and freedom from smoke. There have been instances where plants have been changed from solid fuel to oil fuel, simply because of inability to avoid smoke when using solid fuel.

#### CENTRAL HEATING SYSTEMS

Details of central heating systems will not be dealt with here because the system in general is the same, irrespective of the fuel used, and may take the form of steam or hot water radiators, panel radiators, warm air circulation, air conditioning or a combination of these. The only alterations needed to accommodate oil firing are the provision of a fuel storage system and oil burner, slight modifications to the boiler combustion chamber, and the installation of control instruments.



GENERAL POST OFFICE, SYDNEY.  
Hot Water and Central Heating.

ACCURATE TEMPERATURE CONTROL

OIL FUEL

## OIL FUEL

F O R CENTRAL HEATING



The boiler room in a private house in Sydney, showing in the background the calorifier which supplies domestic hot water. The burner is a fully automatic medium pressure air type.

The burner in small systems is invariably of the fully automatic type and usually operates on the pressure jet or medium pressure air system. In



Two central heating and one domestic hot water boiler, all fired by fully automatic medium pressure air burners. T. & G. Building, Melbourne.

larger installations, semi-automatic control is often used. Rotary burners are very popular, but low pressure air burners and other types are also used.

## COMBUSTION CHAMBER

The combustion chamber, as previously mentioned, must suit the burner. However, the only alteration which is usually necessary to an ordinary boiler consists of removing the fire bars, suitably bricking up the combustion chamber, and fitting a firing front plate instead of the ash door. Alternatively, boilers are available which are specially designed for oil firing and, also, boiler-burner units, are marketed, these comprising a boiler and suitable burner bolted together as a single unit.



Multitubular boiler, fired by rotary burner, supplying steam for central heating and hot water. The calorifier is in the top right corner. City Mutual Life Assurance Building.

## CONTROLS

Controls have already been referred to, but may be enlarged upon here. The heart of the system is the thermostat, which can be set for any required temperature. Where desired, clock switches are available and these will switch on and off at predetermined times or else they can be so arranged to give the required temperature during the day, but a lower and more economical, and possibly a healthier, temperature during the night, this latter temperature also being under full control.

It is not possible to maintain the whole of a large building at any required temperature merely by the use of one thermostat. For such buildings, the burner is governed by the circulating water temperature and each room or group of rooms is provided with its own thermostat, which operates a relay or motorized valve and thus controls the flow of hot water to the radiators in its own particular section.

CONVENIENCE

OIL FUEL



In the days when one took a bath once a week, whether one needed it or not, hot water was a luxury. Nowadays it is a prime necessity and must be provided in every modern building, irrespective of size.

## OIL FUEL F O R DOMESTIC HOT WATER

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### COMBINED HOT WATER AND CENTRAL HEATING

Where central heating is used, hot water can conveniently be drawn from a calorifier coupled to the central heating system. In winter, when central heating is in use, circulation takes place through the calorifier as well as through the main system and the hot water temperature is maintained. In summer the main system is isolated by suitable valves and circulation takes place only through the calorifier. If steam heating is used for the main system, the supply of steam to the calorifier needs to be regulated and this is done by a motorized or relay operated valve controlled by a thermostat in the calorifier.

### BOILER-BURNER UNITS

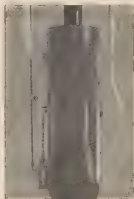
Such a system requires the main boiler to run all the year round, and this may not be convenient or economical. This difficulty is avoided by installing a separate small boiler or boiler-burner unit to take care of the hot water, and this may heat the water either directly or through a calorifier, according to the nature of the water. The burner is controlled by a hot water thermostat instead of by a room thermostat, but with this exception the burner and everything connected with it is identical with a small central heating burner.



A fully automatic medium pressure air boiler-burner unit, for central heating or domestic hot water. Bank of N S W, Stores Dept., Pyrmont.

### NATURAL DRAUGHT BURNERS

Fully automatic burners and boiler-burner units, as described above, are ideal for office buildings, blocks of flats and the larger type of private house, but they have not yet been developed in sizes suitable for smaller homes, and the capital cost of a relatively large unit to undertake small duty may not be justifiable. For these smaller homes, then, natural draught boiler-burner units have been developed. The functioning of these burners has already been described and, in appearance, the unit resembles a rather large chip heater. Such a unit is very moderate in first cost; it requires practically no attention for, having been lit by hand, it operates automatically; it is safe, clean, smokeless and silent in operation, and it provides an unending supply of hot water at a price of one-third to one-half of that of a gas-fired heater performing the same duty. This is despite the fact that the Distillate Fuel, which is used, is more costly than the standard grade of oil fuel.



A boiler burner unit, heated by a natural draught burner which is lighted manually, but which is otherwise automatic in operation.

If the use of oil fuel is advantageous for central heating, how much more so is it for domestic hot water supply? Firstly, the dirt, mess and labour of a solid fuel system goes on all the year round instead of only in winter; secondly, the size is very much smaller and a solid fuel fire is correspondingly more difficult to regulate; thirdly, again because of the small size, a solid fuel fire becomes increasingly inefficient, whereas oil fuel can maintain its efficiency almost irrespective of size.

Compared with gas and electricity, the cost ratio, as given on page 2, is maintained, and the difference in running cost, when capitalised, represents a very appreciable sum.

CLEANLINESS and SILENCE

OIL FUEL

# OIL FUEL

## FOR STEAM BOILERS

The industrial uses of oil fuel are even more important than its domestic applications and, although most of these uses are outside the architect's scope, brief reference will be made to some of them.

*Continued on opposite page.*

### STEAM BOILERS AND INDUSTRIAL FURNACES

The practicability or otherwise of applying oil fuel for firing steam boilers depends on a large number of factors, one of the chief of which is the size of the boiler.

#### LARGE BOILERS

For large boiler plants, as, for example, in an electric power station, the boilers are competently operated to give the best possible efficiency, irrespective of the fuel used, so that the efficiency in any case is satisfactorily high. Therefore, on the score of efficiency, oil fuel is not able to offer any very pronounced advantage and the comparison between fuel costs will be unfavourable to oil, particularly as solid fuel in large quantities is available at a relatively low price per ton. Since the fuel bill may run into thousands of pounds per week, any substantial difference is correspondingly important and the advantages that oil fuel can offer, such as quick steaming, flexibility, labour saving, etc., become proportionately less important. On such large boilers, therefore, oil fuel is seldom used, save under special circumstances. Examples of plant operating in Australia, in which oil fuel is used because of such circumstances, are:—

- (a) **Marine Boilers:**  
Conditions are entirely different from land boilers.
- (b) **Food-stuff Factories, Laundries, etc.**  
Cleanliness is of vital importance, sufficiently so to justify the extra cost of oil fuel.
- (c) **Textile and Silk Knitting Mills:**  
The effect of any grit, etc., on the delicate machinery used in spinning and knitting would be so disastrous that oil fuel is often used to give freedom from these troubles.
- (d) **Manufacture of Photographic Materials:**  
Here again cleanliness and also accurate control are essential.
- (e) **Hospitals:**  
The main requirements are cleanliness, quietness, freedom from smoke and certainty of steam supplies.

#### AUXILIARY FIRING

Apart from the direct firing of large boiler plants, the use of oil fuel has been found very advantageous as an auxiliary fuel for the following purposes:—

- (a) **Peak Load Firing:**  
Oil burners are fitted and are used as required for rapid starting up and for meeting severe overloads. These burners in no way interfere with the combustion of the solid fuel, so that advantage can be taken of the lower cost of solid fuel for meeting ordinary loads and of the flexibility of oil fuel for emergencies.
- (b) **Assisting Low Grade Fuels:**  
To obtain reasonably efficient combustion with low-grade fuels, such as poor coal, wet wood, sugar cane refuse, etc., a reasonably high furnace temperature is required, and often the heat available from the low grade fuel is

not sufficient to maintain this. An oil flame above the fire grate will boost up the furnace temperature; combustion of the solid fuel is thereby made more rapid and more efficient so that the temperature is further increased and the beneficial effect is cumulative.

#### (c) Stand-by Against Failure of Fuel Supply:

Oil burners are sometimes installed in the same manner as for peak load firing and are maintained as a safeguard against colliery strikes, etc. Alternatively, where boiler plant is fired by refuse, such as saw dust or waste wood, the quantity of which fluctuates, oil fuel is used during any temporary shortage.

#### (d) Auxiliary to Pulverised Fuel:

On boilers fired by pulverised fuel, oil is used for heating up the furnace preparatory to lighting the pulverised fuel burners and for maintaining steam on loads so low that stable combustion could not be maintained with pulverised fuel. Such burners have also proved their value for maintaining steam temporarily when the pulverised fuel firing gear has broken down.

### SMALL BOILERS

For small boilers, such as are used in clothing factories, small dyeing and dry-cleaning works, tyre retreading works, bakeries, dairies, butchers' shops, and small laundries, the conditions as regards fuel costs are entirely different from those in large boilers.

In the first place, the efficiency of a small boiler on solid fuel falls off very rapidly indeed, whereas the efficiency with oil fuel can be kept up quite well, purely because of the accuracy with which combustion can be controlled, irrespective of the size of the unit.



5 H.P. Steam Boiler, fired by fully automatic pressure at Turner People's Palace, Brisbane

FLEXIBILITY

OIL FUEL

particularly steam boilers, since so many large modern buildings require steam for some purpose or other, whether it be heating, cooking, air-conditioning, or laundry work, etc.

# OIL FUEL

## F O R INDUSTRIAL FURNACES

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### SMALL BOILERS (cont.)

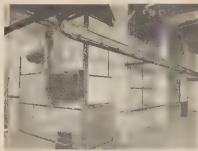
Therefore, on a small boiler, the costs of the alternative fuels are quite comparable, as indicated by the table given on page 2, and are often quite strongly in favour of oil. In the second place, fuel cost is by no means a predominating factor. The total fuel bill may only be of the order of £1-£2 per week and, in view of other circumstances, this may be quite a minor item.

The conditions under which such a boiler operates and the qualities which are required from it are virtually the same as in the case of a central heating plant. The requirements include:—

- Ready availability of an ample supply of steam at any time during the day.
- Reliability of supply without risk of failure.
- Cleanliness.
- Convenience.
- Silence.
- Minimum labour cost, and, if possible,
- Automatic operation

For such requirements, a fully automatic burner of the central heating type is ideal and the burners used are often identical with those used for central heating; the only difference in the controls is that a pressurestat is used instead of a thermostat so that instead of the burner being governed by temperature, it is governed by the boiler pressure, which pressure is kept constant. If automatic control is not required, any of the ordinary manually controlled burners can be used quite effectively.

The clock switches referred to under the heading, "Central Heating," can also be applied to steam boilers and at least one installation exists where the burner is switched on automatically at about 7.30 a.m., and thus produces a full head of steam ready for the operatives when they arrive to start work at 8 a.m.



Travelling conveyor, hot gas recirculation oil-fired baker's oven. Gartrell White Pty. Ltd., Sydney

### INDUSTRIAL FURNACES

The industrial furnaces to which oil fuel is applied, vary so very widely as regards type and purpose that it would be quite impossible even to commence a description of them. The following list, however, which is by no means complete, will indicate the very wide range of purpose for which oil fuel is used—

#### For Metallurgical Work, e.g.:

Aluminium Melting	Ladle Heating
Annealing Furnaces	Lead Melting
Assay and Fusion Furnaces	Nut Making
Billet Heating	Pipe Bending
Boiler Making	Plate Heating
Bolt Furnaces	Retort Heating
Brass Melting	Rivet Heating
Brassing and Dip Brassing	Rivet Making
Bullion Melting	Sand Drying
Canister Making	Shaft Heating
Cake Handening	Shovel Making
Copper Melting	Silver Refining
Cure Drying	Smithy Work
Crucible Furnaces	Spring Tempering
Cycle Making	Steel Melting
Drop Forging	Tilting Furnaces
Enamelling	Tin Smelting
Foundries	Tool Making
Galvanizing	Tube Making
Japanning	Tyre Heating
	Welding
	Wire Annealing
	Wire Making

#### For Other Industrial Work, e.g.:

Air Drying and Heating	Cremation Furnaces
Asphalt Mixers	Gas Enrichment
Bakers' Ovens	Glass Manufacture
Brick Works	Roasting Coffee, etc.
Cement Kilns	Tile and Pottery Kilns
Central Heating, etc.	Valenising Plants
Cloth Singeing	

#### For Numerous Sundry Purposes, e.g.:

Dust Laying	Rust Preventive on
Fruit Spraying	Farming Implements
Ink Manufacture	Sanitary Purposes
Orchard Heating	Swabbing Poultry Pens
Pipe Singeing	Timber Preservation
Road Dressing Preparations	Tobacco Curing
	Weed Killer

For such industrial purposes, the burner used will naturally be selected according to the purpose on hand, as also will the fuel. For small units, even though a large number of such units may be operating in a single works, oil fuel will probably be preferred on account of the ease with which it can be pumped through the long lengths of pipework that may be involved and the accuracy with which it can be controlled at each of the numerous small burners. On the other hand, where the units are large and the fuel consumption of each is heavy, Furnace Oil will probably give equally satisfactory results, provided that it is handled and burned in suitable, efficient equipment. In this case the lower cost of Furnace Oil will more than justify the extra handling equipment that will be needed.

MAXIMUM OUTPUT

OIL FUEL

## OIL FUEL

F  
O  
R  
DIESEL  
POWER

The diesel engine gives the highest efficiency in power production that is commercially obtainable and it has rapidly replaced other forms of prime mover, particularly in medium and small sizes, and where operating conditions are unfavourable.

## STATIONARY DIESEL ENGINES

The Diesel Engine, with its proved economy and reliability is widely used as a source of power. For the Architect it is, perhaps, of special interest in providing lighting and power for private and public buildings. It is the prime mover frequently adopted for the generation of electricity, either for continuous use, or for stand-by purposes as an insurance against the failure of the main electric supply.

In a typical stand-by installation, the engine is directly coupled to an electric generator. As both engine and generator are mounted on a combination bed-plate, a very compact unit is formed requiring a minimum of space. Such a unit can be fitted to ensure the total elimination of any possible vibration; and effective but simple means can be taken to silence the engine exhaust. Engine cooling is provided by a radiator or by totalling enclosed water heat exchangers mounted near the engine.

The whole of the Diesel generating equipment takes up very little space and the layout of the power plant does not give rise to any architectural problems.

## DIESEL TRACTION

Correctly maintained, the high-speed Diesel Engine is unequalled for reliability and reduces the fuel costs of road vehicle operation from 50 to 75 per cent, by reason of the fuel it uses being some 40 per cent lower in price than petrol and its fuel consumption being 45 to 60 per cent that of the petrol engine. However, its cost exceeds petrol engine cost by an appreciable margin, and therefore, since annual mileage to be covered dictates the savings in fuel costs which are possible, it is this figure which determines the time taken to absorb the additional cost of the Diesel Engine, and to indicate which type of engine is the more profitable to employ.

In most countries no very great annual mileage is required to make the Diesel-engined vehicle the more attractive proposition, and development of this type has been rapid. This development, however, was halted during the war, for large numbers of high-speed Diesel Engines were required by the Allied fighting forces which used them in all fields of service except aviation.

Almost without exception heavy duty earth-moving equipment is Diesel powered today, and the same may be said of logging equipment. Agricultural tractors in all but the smallest sizes are available with Diesel power, and almost day by day this type of power unit is being more widely employed for agricultural implements, bringing about substantial reductions in operation costs.

Perhaps the most phenomenal growth in the employment of the high speed Diesel Engine has been in the railway traction field. First development in this field as a power unit for railcars and shunting locomotives in Europe and America, it entered the main line locomotive field in a big way in U.S.A. during the five or six years preceding the war, and the expansion of

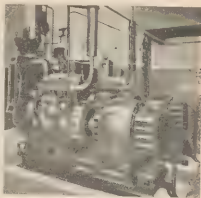
Fuel economy is an outstanding feature of the Diesel engine; its maintenance is low and it can run unattended for long periods. The engine starts instantly from cold and is ready then to be placed on load. Starting can be performed by means of an electric battery self starter with the same ease and reliability as the starting of today's motor car engine. Many plants are provided with automatic controls for starting and stopping; and the modern Diesel Engine installation is designed to give a very convenient and economical source of power.

Because of such features, the over-all running cost per unit of electricity generated is comparable with, and, in some cases, even cheaper than electricity obtained from a main supply station.

## PORTABLE AND SEMI-PORTABLE ENGINES

Where a power unit requires to be portable as, for instance, in road making, stone crushing, concrete mixing, etc., the diesel engine is the obvious choice. It offers all the features which are required by a small unit working under unfavourable circumstances, and, in addition, it is compact and self-contained and relatively light in weight.

Diesel railway traction since that date has been the outstanding feature of railway traction development. Apart from their electrified lines three European countries plan to dieselise their railway motive power entirely, and two American railway companies have already done so, whilst some others are working towards this end. Australian railways plan to make extensive use of Diesel-powered railcars and, in some cases, locomotives.



DIESEL ELECTRIC GENERATOR PLANT installed in the basement of a public building

NO FIRE HAZARD

OIL FUEL

# OIL FUEL

F  
O  
R **DIESEL  
POWER**

36

1

## FUELS FOR DIESEL ENGINES

The following fuels are recommended for medium and low speed Diesel engines:—

Shell Diesel Fuel	C.O.R. Diesel Oil	Vacuum Stanvac Diesel Fuel	Atlantic Diesel Fuel
----------------------	----------------------	----------------------------------	-------------------------

These fuels are not suitable for high-speed Diesel Engines, such as those in road vehicle and railway traction service, the majority of tractor engines and small stationary engines, which require a distillate fuel of certain definite characteristics. The fuels recommended for high-speed Diesel Engines are:—

C.O.R. Light Diesel Fuel	Vacuum Standanol	Atlantic Distillate	Shell Diesel Fuel
-----------------------------	---------------------	------------------------	----------------------

NOTE: There are a few small, medium-speed Diesel Engines which require a distillate fuel, and a few tractor engines which will operate satisfactorily on a Diesel fuel. Thus, the purchaser of a unit should always obtain the manufacturer's fuel recommendation, and refer to the oil company from which he obtains his fuel supplies, before purchasing fuel for the unit.

## THE GAS TURBINE

In limited use since 1935, the gas turbine attracted public attention in the latter stages of the Second World War because of its application to aircraft—particularly as one of the components of jet propulsion power units. The first uses to which it was put, however, were the driving of air compressors in petroleum refineries (in which service over fifty are employed at the date of writing), and in railway traction. Earlier units had a thermal efficiency of 15 or 16 per cent, but a thermal efficiency of 31 per cent has been obtained on test from the largest unit of modern design, thus closely approaching the Diesel Engine in this respect.

It is a characteristic of the gas turbine that its efficiency is limited by the minimum clearances permissible in certain portions of its parts. This aspect has the effect of reducing efficiency as the size is reduced. At the present stage of development sizes below 2,000 h.p. are not economic in commercial application, but

the characteristics and performances of sizes larger than this, ranging in thermal efficiency from 17 to 30 per cent, make the gas turbine a very important prime mover in the higher power field, particularly for such services as electric generation, compressor operation and water pumping.

## FUELS FOR GAS TURBINES

The special types of gas turbine employed in aviation are being developed to operate on oil fuel, but at present special fuels are required. The industrial gas turbine, however, is designed to use oil fuel.

The following fuels are recommended:

Vacuum Stanvac Diesel Fuel	Atlantic Fuel Oil	Shell Diesel Fuel	C.O.R. Fuel Oil
----------------------------------	----------------------	----------------------	--------------------

NOTE: In certain special cases gas turbines are designed and equipped to operate on a heavier grade of oil fuel, but no attempt should be made to use the heavier grade without first obtaining the approval of the builder of the turbine and referring to the oil company supplying the fuel.



Diesel Engine Bulldozer moving logs

## CONCLUSION

In this series of articles, no attempt has been made to describe individual burners, or other similar equipment.

Also, beyond giving photographs of typical installations, no details of the layout or operation of any individual installation has been given. It is felt that any figures of fuel consumption, for instance, are so largely influenced by individual circumstances, that

they do not give a true guide to any future installation, and the inclusion of any such figures might be quite misleading.

It is desired to point out again that, where advice or co-operation regarding any particular job or estimates of fuel consumption under any specified circumstances are required, the services of the Technical Departments of the Oil Companies concerned are always freely available for advice and assistance.

UNFAILING FUEL SUPPLY

OIL FUEL



**MAJOR**  
**OIL BURNERS**  
**AND**  
**INDUSTRIAL**  
**FURNACES**

---



**MAJOR FURNACE & COMBUSTION ENGINEERS PTY. LTD.**  
116 Hanna Street, South Melbourne, Victoria  
2 Harcourt Parade, Waterloo, N.S.W.

# MAJOR FUEL OIL BURNERS FULLY AUTOMATIC

MAJOR FURNACE & COMBUSTION ENGINEERS PTY. LTD.  
176 HANNA ST., SYD. MELB., S.C.S. Tel: MX 2111. 2 HARCOURT PDE., WATERLOO, N.S.W.

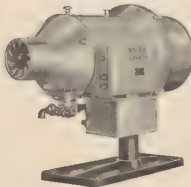
TECHNICAL DATA



SHEET NO. 4

## DESCRIPTION

1917 Issue



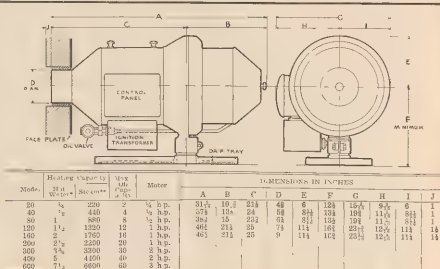
The MAJOR FULLY AUTOMATIC Fuel Oil Burner is of the pressure jet atomisation type, and is a complete assembly in one unit of an electric motor, air fan, oil pump unit with filter and pressure governor, ignition devices and control panel; the pump and fan are directly connected to the motor.

The Burner is neat in appearance, of robust construction, and is carefully designed for reliable service, having all parts readily accessible.

As the description "FULLY AUTOMATIC" implies, the MAJOR Burner is one that lights itself and shuts itself off as the heating load demands, working intermittently at a steady fixed rate.

The mechanical operation of the Burner may be followed from the diagrammatic sketch overleaf by means of the oil pump, the fuel is supplied at a constant high pressure (70-150 lbs. per sq. in. controlled by governor) to the nozzle, which atomises the oil as a fine mist and immediately delivers it into the combustion chamber, where each minute particle is vapourised and is burned in suspension; the initial ignition of the fuel is effected by electric arc from two electrodes connected to a high-voltage transformer. In addition to atomising the fuel, the Burner also supplies the air for combustion which is delivered by the fan through the draught tube into the combustion chamber; an automatic air shutter effectively cuts off the entry of cold air to the boiler when the Burner is not operating.

## CAPACITIES-DIMENSIONS



\* Effective heating capacity in millions B.T.U. per hour after allowing for boiler losses.

\*\* Evaporation capacity, lbs. per hour, depending upon thermal efficiency of steam boiler and based on an average figure of 15 lbs. from and at 212°F. per lb. of oil, and figuring on 5.2 lbs. of oil per gal.



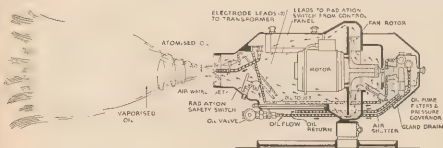
# MAJOR FUEL OIL BURNERS

## FULLY AUTOMATIC

### OPERATION

36

2



#### Burner Controls and Operation

The automatic controls which provide automatic ignition and cut-off are incorporated in the Burner and work in conjunction with a switch operated by radiation from the flame, the combination giving full and positive protection against ignition failure or flame failure from any cause. Upon each normal shut down the control automatically re-sets itself ready for the next complete cycle of starting movements and only in the event of a shut down due to flame failure or ignition failure is manual re-setting of the control necessary. In addition to the above apparatus, an adjustable Boiler Control Thermostat is provided; the function of this instrument is to stop or start the Burner, corresponding with the rise or fall of the boiler temperature within required limits. A Room Thermostat may also be included in the wiring circuit and functions similarly to the Boiler Control Thermostat, except that it operates on room temperature—if desirable, both may be installed. When one (or both as the case may be) of the Thermostats is switched on current flows through a primary circuit starting the Burner motor up and at the same time switching on the ignition. Fuel and air, in correct proportion, are thus supplied to the combustion chamber and are ignited from the electrodes by the high-tension electric spark. The Radiation Switch, which has a heat sensitive Diaphragm, and is normally in the "Cold" position, changes to the "Hot" position as soon as the flame is properly established; this change switches off the ignition but allows the Burner motor to continue running. If the Radiation Switch for any reason fails to promptly come to the "Hot" or safe position, the safety control switch will trip out and remain out until manually re-set. Normally the Burner will run until the Boiler (or Room) temperature, as pre-determined, has been reached, the appropriate Thermostat will then open

the control circuit and the Burner will stop, the oil and air being positively cut off; the apparatus is now set to recommence the cycle as soon as the Boiler Room Thermostat again calls for heat.

#### Combustion Chambers

To secure high efficiency and complete combustion of the fuel without soot or smoke, it is essential that the combustion chamber of the boiler be designed to adequately accommodate the burner flame (or the size of the flame regulated so that it does not strike the walls of the combustion chamber) and thus insure that the oil is burnt in suspension; further, the chamber must be lined with a refractory material (i.e., firebrick) in order to provide a heated zone to maintain the minimum temperature (about 1300 deg. F.) necessary for the efficient clean burning of the fuel. It is recommended also that insulating brick be embodied in the boiler bricking to conserve the heat of the chamber.

MAJOR FULLY AUTOMATIC BURNERS may be applied to any standard type of boiler provided the above requirements are met; on the previous page two typical MAJOR Burner installations are shown.

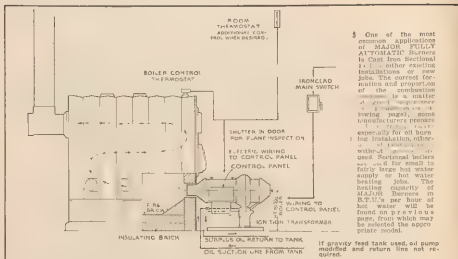
Complete installation drawings showing formation and bricking up of boilers are furnished for each MAJOR Burner installation.

#### Fuel Oil Supply

The fuel oil may be supplied from an overhead service tank, or from an underground tank directly connected to the oil pump on the Burner; in either case positive oil cut-off during idle periods is provided by a pressure governor on the delivery side of the pump. All fuel is filtered and surplus oil returned to tank.

## SECTIONAL BOILER

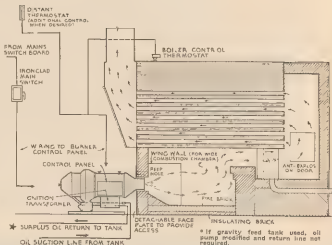
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## UNDER-FIRED MULTITUBULAR BOILER

Underfired Multi-tubular Boilers are also used for hot water supply or heating installations and generally for large demands. The design of the combustion chamber is also of prime importance, wing walls being required. A detachable access plate for the face of the chamber is required and can be supplied with the Burned Automatic controls are similar to sectional Boiler installations. The heating capacities for hot water or steam will be found on previous page.

A general description of the device and the operation thereof is given on the following page.



\* If gravity feed tank used, oil pump modified and return line not required.

# MAJOR FUEL OIL BURNERS MOTOROTARY

MAJOR FURNACE & COMBUSTION ENGINEERS PTY. LTD.  
115 HANNA ST., 5TH. MELB. S.C.S. Tel: MX 2111, 9 HARGROVE PDE., WATERLOO, N.S.W.

TECHNICAL DATA

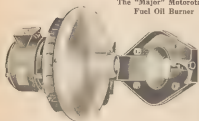


SHEET No. 3

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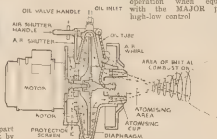
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## DESCRIPTION-OPERATION



The "Major" Motorotary Fuel Oil Burner

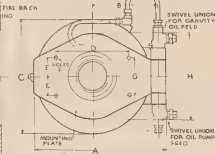
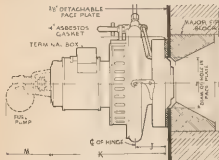
The burner incorporates in one compact unit the burner proper, blower, motor and, where required, the oil pump. Atomisation of the fuel is effected by spinning the oil inside a fast rotating cup from the edge of which the oil is torn apart by centrififugal force. The resulting oil fog is caught by the air blast issuing from the annular nozzle surrounding the cup and is directed into the combustion chamber, where it burns with a brilliant plume shaped flame.



This burner has wide effective operating range and making it particularly suitable for semi-automatic operation when equipped with the MAJOR patent high-low control

Diagrammatical Sketch showing operation of Burner

## CAPACITIES-DIMENSIONS



MOD. EL. No.	NOMINAL RATING FOR BOILERS MAX HEATING SURFACE OR THERMAL CAPACITY B.T.U.	APPROXIMATE OIL CAPACITY PER HOUR UNDER DIFFERENT WORKING CONDITIONS				MOTOR HP ON SUPPLY 240 V. 50 CYCLES	DIMENSIONS (IN INCHES)														
		MAXIMUM CAPACITY (NOMINAL) WITHOUT AIR-LOCKED BY SECONDARY AIR, INDUCED BY DRAUGHT AT 10 INCH WATER COLUMN		MAXIMUM CAPACITY (NOMINAL) WITH AIR-LOCKED BY DRAUGHT AT 10 INCH WATER COLUMN			MIN. CAP. ON 10 INCH WATER COLUMN	A	B	C	D	E	F	G	H	I	J	K	L	M	
		MAXIMUM CAPACITY (NOMINAL) WITHOUT AIR-LOCKED BY SECONDARY AIR, INDUCED BY DRAUGHT AT 10 INCH WATER COLUMN	MAXIMUM CAPACITY (NOMINAL) WITH AIR-LOCKED BY DRAUGHT AT 10 INCH WATER COLUMN	MIN. CAP. ON 10 INCH WATER COLUMN																	
1	70 108,000	1 1/4 GALS.	2 1/2 GALS.	4 GALS.	1/2 HP	12 1/2	6 1/2	10 1/2	5 1/2	2 1/2	3 1/2	4 1/2	7 1/2	4 1/2	2 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2
2	150 216,000	2 1/2	5 1/2	8	3/4 HP	14 1/2	7 1/2	12 1/2	6 1/2	3 1/2	4 1/2	5 1/2	8 1/2	5 1/2	3 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2
3	280 408,000	4	8	14	1 1/2 HP	18 1/2	9 1/2	16 1/2	8 1/2	4 1/2	5 1/2	6 1/2	10 1/2	6 1/2	4 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2
4	600 1,152,000	8	16	30	2 HP	24 1/2	12 1/2	22 1/2	10 1/2	5 1/2	6 1/2	7 1/2	14 1/2	7 1/2	5 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
5	300 576,000	16	32	60	4 HP	30 1/2	15 1/2	28 1/2	12 1/2	6 1/2	7 1/2	8 1/2	18 1/2	8 1/2	6 1/2	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2

\* OIL PUMP NOT APPLICABLE TO MODEL No. 5. OIL CONTROL IS ON END.  
\* WHEEL, MODEL No. 3, IS FITTED WITH A SINGLE PHASE MOTOR.  
DIMENSION "K" IS INCREASED BY 1/2 IN. & 1/4 IN. HOLES MOUNTING ONLY

## MAJOR FUEL OIL BURNERS

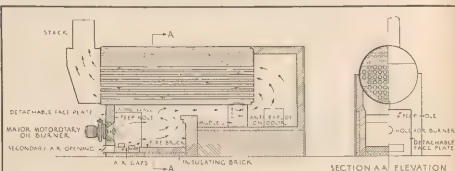
The illustrations on this page are of typical applications and will serve to indicate in a general way combustion chamber and air

supply arrangements. Full details of any particular requirement will be supplied by our Technical Department.

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2

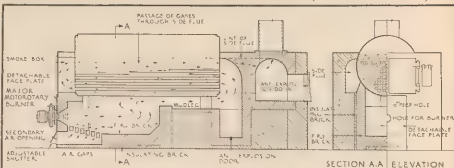
### UNDERFIRED MULTITUBULAR BOILER (Colonial Type)



This type of burner is admirably adapted for use on steam and hot water boilers and is supplied for either manual or semi-automatic (high-low) control. This design incorporates kinetic atomisation and is able to satisfactorily operate on fuels of greatly varying viscosity. The MAJOR MOTOROTARY Burner has a very wide range of control which makes it particularly suitable for applications having a widely fluctuating load. MOTOROTARY

Burners are equally suited for gravity or pumped oil supply. Pumping units are an alternative standard fitting and, when used, the fuel is drawn directly from an underground storage tank without passing through any intermediate gravity service tank. Pumps are of the positive slow speed rotary type and are driven through a ball bearing totally enclosed worm reduction gear by the burner motor.

### UNDERFIRED MULTITUBULAR BOILER (with Side Flues)



MAJOR MOTOROTARY Burners when fitted with Automatic Controls are capable of maintaining steam pressure constant despite widely varying steam demands. These controls are usually supplied to operate on the high-low principle and the burner alternates according to the heat demand between a predetermined low or pilot setting and a predetermined maximum setting. Alternatively, by a

slight modification, the burner can be made to "float on the load," i.e., it can according to the demand automatically take up any position between the minimum and maximum settings. All burners whether manually or automatically controlled can be provided with automatic protective devices for completely shutting down the burner in the event of flame failure, low water, or other contingencies.

**STOKERS AND  
TEMPERATURE  
REGULATION**

SECTION

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SECTION

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Trevor Boiler and Engineering Co.'s  
Catalogue

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# TREVOR-BROSS "Patented" SPRINKLER SPREADER OVER-FEED STOKERS

Patent No. 108,251/39

Manufactured  
in Victoria  
Australia,  
under U.S.A.  
patents.

Capacities:  
50 lbs. to  
4,000 lbs. coal  
per hour.

In 10" as  
illustrated, also  
16" and 24"  
with special  
patent  
dumping  
grates.



This stoker  
successfully  
handles Lignite  
industrial nut  
briquettes,  
coal, coke, saw-  
dust and other  
low grade fuels.

**Saves Fuel**—By maintaining the proper fuel air ratio like carburettor.

**Saves Time**—By being automatically controlled.

**Saves Power**—Only  $\frac{1}{2}$  H.P. motor required.

**Saves Work**—No clinkers to remove.

**Saves Up-keep**—No tuyeres to replace.

**Saves Money**—No part of stoker in furnace to burn up.

**Saves Repairs**—All running parts greased or sealed in oil and protected from dust.

**Saves Delays**—Quick response to demands, always keeps steam up.

**Saves Brickwork**—No deep fuel bed to slag on to wall.

**Saves Labour**—By requiring no attention. Fire needs cleaning but once or twice a day.

STEEL STREET,  
NORTH MELBOURNE

RANSAY'S CATALOGUE

## TREVOR BOILER AND

Sturdy construction is evident from the size of gear case and stoker frame. Simplicity of design and control are valuable assets to any Boiler Room. The adjustment for altering the length of stroke by lost motion is simple and positive.



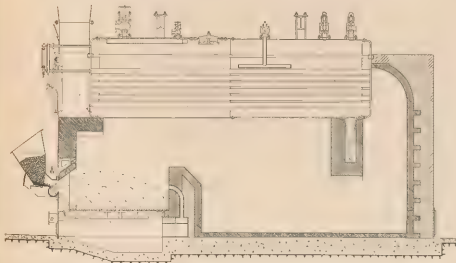
Access to the furnace is easily obtained. The whole stoker unit is mounted on a hinge and swings out of the way as shown above. The opening uncovered by the stoker and the fire door gives ample room for entrance, clearing, repairs, or emergency hand firing.

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I

## BOILERS

We manufacture Underfired Multitubular, Water Tube and Vertical Boilers of all types with steam output ranging from 100 lbs. to 25,000 lbs. of steam per hour and pressures up to 160 lbs. per square inch. Complete installations designed and installed to meet every condition.



Installation of Trevor-Bross 10" Overfeed Spreader Stoker with separate fan at H. B. Dickie Ltd., Yarraville, Victoria, under Trevor Standard Multi-tubular Boiler.

**ENGINEERING CO. PTY. LTD.**

TELEPHONE: FJ5125  
(3 lines)

—RAMEY'S CATALOGUE





**REFRACTORIES**

SECTION

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SECTION

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Nonporite Catalogue

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# NONPORITE PTY. LTD.

292-6 BURWOOD ROAD, HAWTHORN, E.2. VICTORIA

37a

1

**REFRACTORIES:**   Plastics — Shapes — Tiles — Muffles — Bricks.   Cements for bonding all firebrick.

in "CARBOLOX" (Silicon Carbide), "ALUTITE" (Fused Alumina), "MULLOX" (Mullite), "CHROMEFRACTITE" (Chromite), "REFRACTITE" (Aluminium Silicate).

All Produced for Specialised Conditions of High Temperature.



Partial set-up of a CARBOLOX (Silicon Carbide) enamel furnace muffle with Mullux Hearth Supports.



Muffles, Tiles, Trays and Tuyeres in CARBOLOX (Silicon Carbide).

## INSULATION for Heat and Sound

Plastic — Shapes — Tiles — Bricks — Granules.   Cements for bonding all burnt shapes

in "INSULOX" (Diatomaceous Earth).

"MICALOX" (Exfoliated Vermiculite).

All Produced to Meet Requirements of Insulation Under High Heat or Refrigerated Conditions.   Also as the Body for Sound Absorbent Plaster and Tiles.

## ACID-PROOFING:

Plastics — Shapes — Cements — Coating — Pipe-jointing — Paving.

in "CERAMIC ACID-PROOF CEMENT" (Silicate Type).

"PERMELASTIC" (Bituminous Mastic—Solid—Caulking).

All Produced to meet certain conditions.   Consult Nonporite Pty. Ltd. for recommendations.

**ELECTRICAL  
DISTRIBUTION  
& ILLUMINATION**

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SECTION

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CATALOGUES 1 to 7

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# ELECTRICAL INSTALLATION AND EQUIPMENT

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8	ELECTRIC WATER HEATING
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## A TECHNICAL SERVICE TO THE BUILDING INDUSTRY

To-day the architect's conception of a building, and detailed planning to fulfill its function, is extraordinarily dependent upon electricity and electrical equipment. Throughout every building there must be a system of wiring serving electrical equipment. Careful thought in planning and selecting equipment for electrical service will play a major part in determining the adequacy of a building for its purpose.

Specialized co-operation between architect and the electrical specialist is therefore desirable.

From the electricity supply authority, expert and unprejudiced advice on all electrical matters can be obtained. For the purpose of making such advice available, without charge or obligation, the supply authority retains the services of highly qualified specialists with an extensive experience of the electrical problems confronting the architect. Their specialists act as consultants in an advisory service for the benefit of those who must make major decisions.

You are invited to avail yourself of this practical, professional service which aims at the maximum efficiency and utmost economy in the application of electricity to specific and varied purposes.

Some detailed information has, of necessity, been omitted from the following sheets. Your local ELECTRICITY SUPPLY AUTHORITY will be happy to furnish you with further detailed information.

## SALE OF EQUIPMENT

Many electricity supply authorities sell electrical apparatus to their customers on easy hire purchase terms. In some cases the supply authority sells industrial and commercial equipment as well as domestic apparatus. The hire purchase terms vary according to the type of apparatus, but more generous terms are usually offered on domestic apparatus. Up to six years' terms are available in some centres, sometimes without deposit.

Some authorities hire domestic apparatus, such as ranges and water heaters, at very low rental rates. The hire rates sometimes provide for free installation and free maintenance.

The usual trade discounts are generally available to builders and other trade buyers on both cash and hire purchase sales.

Authorised by

**THE ELECTRICITY SUPPLY  
ASSOCIATION OF AUSTRALIA**

Railway Buildings, Flinders St,  
Melbourne, C.I.—Box 1823Q

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I

These notes on, and specification for, wiring in residences are intended for architects, specification writers, and others, and are a guide to the specification of the electrical installation in a residence.

## ● DETAILS OF THE ELECTRICAL WIRING INSTALLATION

General Wiring Practice and Recommendations for Adequate Electrical Service.

### METERS

Before the building layout is completed the Supply Authority should be consulted regarding the position of the meter and the space to be provided for this equipment. Where meters and other equipment are to be enclosed, the type of enclosure should be specified in the general specification.

### SWITCHBOARD

#### (a) Location:

The location of the main switchboard determines the respective lengths of the consumer's mains and the amount of circuit wiring in any particular installation. The aim should be to provide an arrangement giving the lowest total cost of mains and circuit wiring having regard to the convenience of the owner, the requirements of the Electricity Supply Authority, and possible future additions to the installation.

The switchboard panel or space adjacent to the switchboard should be such as to permit the installation of additional circuits at a later date. The switchboard should be located in a convenient position for the operation of switches, replacement of fuses, etc., and should be placed in a dry, well-ventilated position. Most Statutory Authorities prohibit the placing of switchboards above gas stoves or sinks, or in bathrooms, lavatories, or the washing rooms of laundries, or in the vicinity of a gas meter, unless the room or compartment containing it is adequately ventilated.

#### (b) Components:

Two types of components are commonly used—

- (i) An insulating panel on which is mounted either—  
a switch (or switches) and cut-outs (fuses)

or

- (ii) miniature circuit breakers.

- (iii) Unit type gear, either—  
a combined switch fuse

or

miniature circuit breakers.

Each type has its own particular advantages. The decision as to which type should be used is largely based on costs, although the ease of restoring supply after it has been interrupted by a fault in the installation should be taken into consideration.

**Grouping of Outlets.**—Some supply authorities permit the connection of up to 15 general purpose outlets (power points) to a final power circuit. The local electricity supply authority should be consulted in this regard. Where it is considered that considerable inconvenience may result if a fault in one circuit or appliance causes a complete loss of supply through the operation of the cut-out or circuit breaker, the installation may be divided into a greater number of circuits, each supplying a small number of outlets.

The position of lighting points should receive careful consideration, bearing in mind the type of rooms where the lights are to be installed, and the type of fittings to be used.

For example, in porches, halls, etc., the position of the lighting point should be such that undesirable shadows are not created, e.g., shadows on the treads of steps, etc. The position of lighting points with respect to cupboards is important so that the interior of the cupboard will receive adequate illumination. Provision should also be made for adequate outdoor lighting for porches, terraces, etc.

The advantages of 2-way or multi-way switching should be considered, and it is recommended that this type of switching should be used on locations such as stairs, rooms with more than one entrance, long passages, garage lighting, etc.

A general purpose outlet is usually controlled by a switch immediately adjacent to the socket, but the switch may be placed up to five feet away from the socket to increase convenience.

General purpose outlets should not be placed in any position merely to take advantage of fixing surfaces, e.g., architraves, nor merely to save a few feet of wiring, but their positions should be carefully chosen to ensure that—

- (a) there will be little likelihood of the general purpose outlet being covered or obstructed by furniture;
- (b) they are placed where needed, i.e., in a convenient place for a radiator, where the radio is likely to be located; where the refrigerator is likely to be placed, near the ironing position, etc.;
- (c) the wall will not be finger-marked due to the position of the switch;
- (d) the shortest possible length of flexible cord will be required for each appliance; and
- (e) flexible cords are not likely to be tripped over.

Owing to their loading it may be necessary to install individual circuits for the larger appliances such as ranges, wash boilers, instantaneous water heaters, etc. Storage hot water heaters may be supplied under a separate tariff and, where this is so, they must be separately metered and controlled.

### LIGHTING POINTS

### CONTROL OF LIGHTING POINTS

### GENERAL PURPOSE OUTLETS (Power Points)

### INDIVIDUAL CIRCUITS FOR LARGE APPLIANCES

**HEATING  
AND AIR  
CONDITIONING**

Separate circuits may be required for fixed heating appliances installed in the living room, bedrooms, bathroom, etc. In some climates air conditioning may be provided in the home—small conditioners can be operated from general purpose outlets, but larger machines may require special circuits.

**BATHROOM**

Fixed heating such as a built-in radiator, tubular heater, convector, etc., will provide comfortable warmth in the bathroom. Provided this heater is rated at 1,000 watts or less, it may be connected to a circuit of general purpose outlets. A fixed heater is suitable for a bathroom, but a portable heater should not under any circumstances be used in a bathroom.

**GARAGE,  
WORKSHOP, ETC.**

Electrical facilities should be provided for these buildings. It is recommended that the portion of the circuit between these buildings and the main building should be protected by some form of enclosure, e.g., water piping. This may be overhead or underground, depending upon the relative location of the buildings. A general purpose outlet for portable lights, tools, etc., should be provided, together with fixed lighting. This lighting may be required to be controlled by two-way switching.

**OUTDOOR  
EQUIPMENT**

Consideration should be given to adequate outdoor lighting to conform with the design of porches, pathways, terraces, exterior steps, etc. All the switches and fittings exposed to the weather should be of the weatherproof pattern.

**CUPBOARDS**

Where a cupboard is deep or so placed that it is inadequately illuminated by the normal room lighting, suitable lights should be installed within the cupboard. An automatic door switch is a convenient method of controlling these lights.

**EXHAUST FAN**

An exhaust fan will assist in removing cooking odours from the kitchen. Provision should be made for its installation in the original contract.

**BELLS**

A transformer will provide supply for the bell circuits in the residence. The bell pushes, bell, buzzer, indicator, and wiring could, with advantage, be included in the electrical contract.

**SYSTEMS OF  
WIRING**

The conduit system and the tough rubber sheathed systems are those most commonly used in residences. Wiring is usually concealed in the plaster, in hollow partitions, or on wall cavity, but on exterior walls or single brick walls it may have to be placed on the surface.

**TYPES OF  
SWITCHES**

Flush switches of the all-insulated type are now practically standard throughout modern homes, mainly because of the improved appearance of such switches. A number of these switches may be grouped together with a common cover plate to centralise the controls of a number of points. Where wiring is run on the surface of the wall, such as in laundries, outhouses, garages, etc., surface mounted switches are commonly used.

**• RECOMMENDATIONS FOR ELECTRICAL WIRING INSTALLATIONS**

To obtain the full advantage of the many facilities electricity can provide in the home, an adequate wiring installation is essential. The following notes set out the recommendations for the various rooms of a home. Each design should be carefully studied, as more outlets may be wanted for increased convenience.

**ENTRANCE**

Exterior lighting point.  
Electric bell or chimes.

**VERANDAH**

Lighting point.  
General purpose outlet for lighting, small appliances, etc.

**HALL OR PASSAGE**

Lighting point.  
General purpose outlet for decorative lighting, vacuum cleaner, etc.

**LIVING ROOM**

Central lighting point.  
Clock outlet.

At least 2 general purpose outlets, for lighting, radio, vacuum cleaner, small appliances, etc.  
Fixed room heating.

**DINING ROOM**

Lighting point.  
Clock outlet.  
1 general purpose outlet for lighting, radio, percolator, vacuum cleaner, small appliances, etc.  
Fixed room heating.

**BEDROOMS,  
STUDY, SEWING ROOM,  
SUN ROOM, OTHER  
LIVING ROOMS**

Lighting point.  
2 general purpose outlets for bedside lighting, heating, radio, vacuum cleaner, etc.

**BATHROOM**

Central lighting point.  
Mirror lighting.  
Fixed room heating.

**KITCHEN**

Lighting point in centre of room.  
Lights over work areas such as range, work table, sink, etc.  
Range.  
1 outlet for refrigerator.  
2 general purpose outlets for toaster, broom, mixer, percolator, radio, fan, heater, door polisher, etc.  
Exhaust fan.  
Clock outlet.

**DINING ALCOVE**

Lighting point.  
1 general purpose outlet for toaster, percolator, etc.

**LAVATORY**

Lighting point.

**LAUNDRY**

Lighting point.  
1 general purpose outlet for washing machine and iron.  
Wash boiler.

**GARAGE**

Lighting point.  
1 general purpose outlet for trouble light, small tools, etc.

**EXTERIOR LIGHTING**

Adequate lighting for porches, steps, drives, etc.

**HOT WATER SUPPLY**

Wiring for hot water system supplying bathroom, kitchen and laundry.

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I

## • THE ELECTRICAL SPECIFICATION FOR A RESIDENCE

Typical recommended clauses

### Introduction:

This specification is confined to the clauses relating to the electrical installation in a residence, the specification writer should insert in the main body of the general specification clauses dealing with payment, alteration of work, arbitration, relations with and discounts to other trades, making good, guarantees, etc. The following clauses and schedules for a specification are set out together with notes on these clauses, to illustrate a typical specification based upon up-to-date practice.

## ELECTRICAL SPECIFICATION FOR RESIDENCE AT . . . . . FOR . . . . .

### 1. SCOPE

Unless otherwise specified herein, the contractor shall supply, erect, and connect all necessary material to complete the electrical installation for its full operation in the residence at the above address.  
These clauses are to be read in conjunction with Schedule No. . . . . and Drawing No. . . . .  
These clauses are to be read in conjunction with the relevant parts of the general specification covering the building.

### 2. COMPLIANCE WITH REQUIREMENTS

The electrical installation shall be carried out in accordance with the requirements of the . . . . .  
The contractor shall ascertain from the Electricity Supply Authority its requirements regarding the correct size of . . . . .  
The contractor shall . . . . . and pay all necessary fees associated with the work.  
[Insert the name of the Statutory Body governing electrical installation in the area (e.g., local Electricity Commission, Department of Local Government, or Supply Authority).]

### 3. TARIFFS

The installation shall be so arranged that the supply in it may be metered as required by the Electricity Supply Authority.  
[Electricity supply tariffs are not uniform throughout Australia and, as they affect the design of the electrical installation, the specification writer should consult the Electricity Supply Authority as early as possible.]

### 4. SYSTEM OF WIRING

Except where otherwise required by the Supply Authority, the installation shall be carried out in  
(a) Braided rubber insulated cables (V.I.R.) enclosed by close joint conduit.

or  
(b) Tough rubber sheathed cables  
All wiring shall be concealed except in . . . . . where it may be run on the surface.  
[Delete the type of wiring not applicable. The system of wiring depends to a large extent upon local conditions and availability of materials.]  
[Delete locations where exposed wiring will be permitted.]

### 5. CONSUMER'S MAINS

The consumer's main, . . . . .  
These mains shall be run between the point of attachment indicated by the Electricity Supply Authority and the metering position, and also between the meter and switchboard.

### 6. SWITCHBOARD

At the location marked on the drawing the contractor shall install an approved switchboard incorporating—

- (i) Switch(es) and cutouts
  - (ii) Combined switch and fuse units
  - (iii) Minimum over-circuit breakers
- Space shall be provided on the switchboard for the connection of two additional circuits.  
The apparatus mounted on the switchboard shall be arranged in a neat manner and grouped to provide easy identification. All wirings shall be neatly and permanently made in an approved manner. A neat and durable schedule describing the circuits shall be provided and mounted in an approved position.  
[Delete out the two sections not applicable.]

### 7. LIGHTING POINTS

Lighting points shall be installed as set out in the Schedule and as shown on the Drawing. Switches, including multi-way switches for controlling the lighting outlets, shall be installed at the points indicated on the Drawing.

### 8. GENERAL PURPOSE OUTLETS (Power Points)

General purpose outlets shall be installed at the locations indicated on the Drawing and set out in the Schedule.

### 9. APPLIANCES

The contractor is not required to supply the appliances listed in this clause (unless otherwise specified). The contractor shall install all wiring and make all electrical connections for—

- kW Range
- kW Wash Boiler
- kW Hot Water Service (or Water Heater(s))
- kW Freez Indicator
- Oil, Exhaust Fan

[Indicate the type and size of each appliance together with the number of appliances.]

### 10. ACCESSORIES

All lamp holders, switches, ceiling roses, and socket outlets, shall be of the all-insulated type and shall be submitted to the approval of the Statutory Body before installation. Switches and sockets of the flush type shall be used throughout the installation except in the . . . . . where surface mounted accessories may be used.  
Lamp holders shall be of the standard bayonet cap (B.C.) type. General purpose outlets shall be of the 13-amp flat-pin type. Switches for controlling lighting points shall be mounted at a height of 4 ft. 6 in. from the floor (unless otherwise specified). Flush type switches for lighting shall be mounted in the architrave or recessed into the wall. Surface mounted switches shall be mounted on approved base blocks or cavity rings.  
[Delete locations where surface wiring is to be installed and where surface fittings may be used.]

### 11. BELLS AND BELL CIRCUITS

The contractor shall supply and install a . . . . . bell system at front door and back door and a bell (buzzer) (chime) at the position indicated on the Drawing. All of this equipment shall be submitted for approval before installation.  
[Indicate the position of the bell pushes and the type of signalling equipment required.]

### 12. LAMPS AND LIGHTING FITTINGS

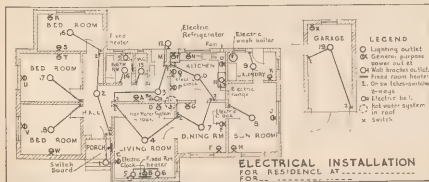
The contractor is not required to supply lamps or lighting fittings (unless otherwise specified). The contractor shall supply and install all wiring and make all electrical connections for the correct installation of lamps and fittings, and shall install and connect all necessary equipment for the correct installation of lamps and fittings, and shall install and connect all necessary equipment for the correct installation of lamps and fittings.



- A TYPICAL SCHEDULE AND WIRING PLAN FORMING PART OF THE ELECTRICAL SPECIFICATION

Room	LIGHTING				GENERAL PURPOSE OUTLETS			APPLIANCES AND ACCESSORIES			
	Point of Use	Type	No. of Ways	Position Type of Fittings	Ref. Letter	Type	Position	Appliances	Position	Loading or Size	Remarks
Porch	1	Wall Bracket	One Way	Flush Selected Weatherproof				Refr. Fresh Bell Tovar	At door 5' 6" below		
Hall	2	Ceiling Rose Ceiling Rose	Two Way	Flush Selected	A	Flush	Immediately above shirting	Bell	On Wall 7' 6" above floor		
Living Room	3 4 5	Ceiling Rose Wall Bracket	Two Way One Way	Flush Selected	B C D	Flush Flush	In mantle shelf Immediately above shirting				For Clock
Dining Room	7	Ceiling Rose	Two Way	Flush Selected	E F	Flush Flush	7' 6" from floor Immediately above shirting				For Clock
Sun Room	8	Ceiling Rose	One Way	Flush Selected	H J	Flush Flush	Immediately above shirting				
Laundry	9	Ceiling Rose	One Way	Flush 8" Opal glass enclaving unit*	K	Flush	3' 6" above floor				
Kitchen	10 11	Batten Holder Wall Bracket	Two Way One Way	Flush Selected Wall Bracket	M N O P Q	Flush Flush Flush	Immediately above shirting 12" above work bench 6" above floor Immediately above door	Exc. Wash Sinks Hot. Refrig.	At shelve	1 1/2 x 5 1/2 x 3	For Cor.
Back Porch	12	Wall Bracket	One Way	Weather- proof Selected Weatherproof							
W.C.	13	Batten Holder	One Way	Flush 8" Opal glass enclaving unit*							
Bath Room	14 15	Batten Holder Wall Bracket	One Way One Way	Flush Flush Selected							
Bed Room	16	Ceiling Rose	One Way	Flush Selected	R S	Flush Flush	Immediately above shirting				
Bed Room	17	Ceiling Rose	One Way	Flush Selected	T U	Flush Flush	Immediately above shirting				
Bed Room	18	Ceiling Rose	One Way	Flush Selected	V W	Flush Flush	Immediately above shirting				
Garage	19	Batten Holder	Two Way	Surface 8" Opal glass enclaving unit*	A	Surface	3' 6" above floor				
Hot Water Service								R.W.S.	In med	2.0 kW	

Note.—Wiring Contractor to supply fittings marked thus \*



Electric ranges have for many years set the standards in design and performance. Continuous study of modern culinary needs have made the electric range the ultimate in cooking equipment. Full porcelain enamel finish, smooth external design, heavy insulation and the absence of flame or external heat make the electric range ideally suited to the demands of the contemporary colourful, built-in kitchen.

### ● TYPES OF ELECTRIC RANGES

Electric ranges are available in table top, elevated oven and low oven types.

Models may be obtained with one, two, three or four hotplates (boiling plates). There is a model available to meet the requirements of any and every type of residence from the smallest flat to the largest home. A separate external grilling element may be provided, as in ranges of English design, or grilling may be carried out in the oven. In the latter case, a suitable element is provided at the top of the oven.



TABLE TOP TYPE - ELEVATED OVEN TYPE - LOW OVEN TYPE

### ● SELECTING THE SIZE OF RANGE

It is usual to classify electric ranges in size according to the number of boiling plates on the range. The oven size increases with the number of hotplates provided. The size of range required to meet particular needs will be determined mainly by the number of people and the type of premises to be served. The following table is intended as a guide to the minimum number of hotplates necessary.

No. of Persons	Application	Boiling Plates Required
1	Bachelor Flats, etc.	1
Up to 5	Medium Flats, Small Residences, etc.	2
Up to 8	Large Flats, Medium Residences, etc.	3
Up to 20	Large Residences, Boarding Establishments, Private Hotels, Small Hospitals, etc.	4

### ● BOILING PLATES

Boiling plates are usually classified according to their wattage, thus: high wattage or high speed, medium wattage, low wattage. The modern high wattage boiling plate will boil two pints of water in eight minutes or less. Medium and low wattage boiling plates are for general cooking. It is standard practice to fit at least one high speed boiling plate to a range.

### ● OVEN

The oven of the electric range is so well insulated against loss of heat that a technique of cooking on stored heat can be employed. Heating elements and baffles are arranged to give the best heat circulation in the oven. Oven is fitted with heat indicator or thermostat which enables any required cooking temperature to be maintained. No other type of oven possesses all these features. It is the combination of these features that gives the electric oven its superiority over other methods of cooking.

### ● THERMOSTAT and HEAT INDICATOR

The electric oven is admirably suited to automatic control by thermostat. Electric thermostats are usually fitted with a pilot lamp which indicates when the desired temperature has been reached. This is a feature exclusive to the electric thermostat. The oven heat-indicator and the constant, even heating assures continued repetition of cooking successes.



### ● COST OF COOKING

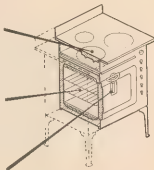
The charges for domestic electricity offered by electricity supply authorities make cooking by electricity a very economical method.

Special rates are offered by some electricity supply authorities for electricity used in premises where electric cooking ranges are installed. These low rates make electric cooking still more economical and the all-electric home a particularly attractive proposition. The average consumption of electricity for cooking approximates one kilowatt-hour (unit) per person per day. Many dishes can be cooked after the electricity is switched off.

### ● CLEAN AND COOL

Because electric heat is flameless, there is a complete absence of fumes, soot and smoke. Utensils never blacken. Kitchen walls do not discolour or stain from these causes.

The heat is retained in the oven because of the heavy insulation, and the kitchen temperature is not noticeably raised during cooking.



## INSTALLATION DATA

### ● DIMENSIONS

Electric ranges vary in dimensions and it is not possible to give a full list of the dimensions for all makes. The following table will serve as a guide to the maximum space requirements and electrical loadings and may be used for preliminary planning. Exact measurements for any particular range can be obtained from the electricity supply authority.

### TYPE OF ELECTRIC RANGE \*


**TABLE TOP TYPE**

**ELEVATED OVEN TYPE**

**LOW OVEN TYPE**  
 ONE HOTPLATE  
 TWO       "  
 THREE     "  
 FOUR      "

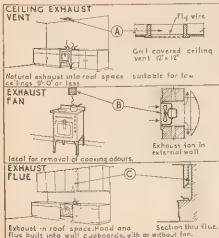
Type of Electric Range (a)	Maximum Overall Dimensions (b) Width x Depth (Ins.)	Total Electrical Rating in kW
Table Top Type	40 x 25	6.0 to 12.0
Elevated Oven Type	49 x 27	6.0 to 12.0
Low Oven Type		
One Hotplate (c)	20 x 19	2.4 to 4.25
Two Hotplates	26 1/2 x 24	6.25
Three Hotplates	29 1/2 x 26	7.25
Four Hotplates	30 x 28	11.0

### NOTES \*

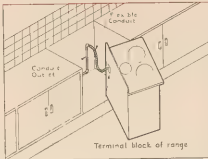
- (a) For the purpose of dimensions a dual-purpose grille-boiler or a deep-wet cooker is classified as a hotplate.  
 (b) The depth is the measurement from the front edge of the hob. On models other than streamlined models, the hob projects outside the front face of the range by 1 1/2 inches.  
 (c) Often supplied for use on a stand. Nett height of range without stand is about 18 inches.

## INSTALLATION DATA

### ● EXHAUST VENTILATION



### ● WIRING PROVISION FOR A BUILT-IN RANGE



The wiring outlet on the wall, at the rear of the range recess, should be connected to the terminal block of the range by a flexible conduit to permit access for connection or disconnection of the range.

See specification provisions in "Electrical Installation for the Home."

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Electricity is the most efficient means of heating water.

The electric heating element is immersed directly in the water, and as a result practically all the heat supplied is transferred directly to the water. This and ample heat insulation are the reasons for the high efficiency and low running costs which are characteristic of electric water heaters.

The immersion of the heating element directly in the water also considerably simplifies the construction of the electric water heater, giving a minimum of parts and reducing servicing to a minimum.

The absence of flues and naked flame make the electric water heater particularly suitable for building into the ceiling or placing in a cupboard or in the basement.

Electric water heaters are available in two main types—storage and instantaneous.

## STORAGE WATER HEATERS

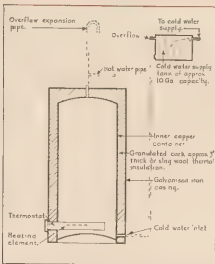
The storage water heater consists mainly of a cylinder, usually constructed of copper or copper alloy, surrounded by heat insulating material and enclosed in an outer casing of suitable material. One or more heating elements are fitted in the inner cylinder and the whole or portion of these elements controlled by a thermostat.

Types.—Storage water heaters may be used to give a complete hot water service, in which case they are generally called storage hot water systems, or they may be used to give a constant supply of hot water at one particular location, such as the bathroom, kitchen sink or hand basin. In these latter cases they are usually classified according to the use to which they are put, thus: sink storage water heater, bathroom storage water heater, etc.

## STORAGE HOT WATER SYSTEMS

There are two main types of electric storage hot water systems—the displacement type and the falling level type. Both types, if properly designed, will give an efficient and plentiful supply of hot water. They are automatically controlled. No attention by the user is necessary.

### • THE DISPLACEMENT TYPE SYSTEM

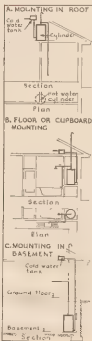


In the displacement type of system, cold water is fed into the bottom of the heater, displacing the hot water, which is drawn off at the top. Cold water supply is usually from a cistern type feed tank. Although there is hot and cold water in the heater at the same time there is practically no mixing of hot and cold water. Water is supplied at an average temperature of 100 deg F.

### GENERAL NOTES

- A more efficient and economical system results from:
- Closely grouped water services in the dwelling.
  - The installation of heater close to the kitchen sink.

### Types of Installations

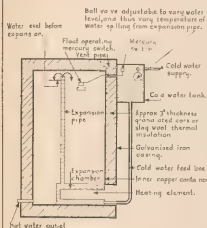


**A. Heater Above Ceiling.**—Suitable where adequate roof space available. In some cases the cold water feed tank is mounted directly on top of heater, but frequently it is mounted independently from the heater. Headroom and wall support largely dictate position. Pipe runs may be long and reduce efficiency of system. Water pressure usually good. Roof storage is economical of space.

**B. Heater on Floor or in Cupboard.**—Necessary where low-pitched or flat roof is designed. Location reduces length of pipe runs, and if kitchen and bathroom are adjacent, a very efficient system results. Cold water feed tank should be at least three feet above, nearest hot water outlet, i.e. usually the shower.

**C. Heater in Basement.**—Some advantage in flat buildings or smaller multi-dwelling units for space conservation. Cold water feed tank is usually located on roof or at least three feet above highest hot water outlet on top floor. Height of feed tank above heater determines pressure head and possible heavier contraction of heater. When ordering, specify height of feed tank above bottom of heater.

## ● THE FALLING LEVEL TYPE SYSTEM



A TYPICAL FALLING LEVEL HEATER

## NOTES

The falling level type heater may be likened to a large automatic hot water urn. Both electricity supply and the cold water feed are controlled automatically so that the temperature of the incoming water is maintained at a definite temperature, usually between 145 deg. F. to 170 deg. F.

The hot water outlet for the falling level heater is situated near the bottom of the heater. As the name implies, the water level in the heater falls as hot water is drawn off. The hot water flow from the heater is purely by gravity, and it must therefore be erected so that the bottom is at least three feet above the highest hot water outlet. This practically confines its installation to the ceiling.

Cold water supply to falling level systems is usually through a cistern type feed tank mounted on the side of the heater.

Falling level heaters can be made squat and this, combined with the mounting of the feed tank on the side of the heater, reduces the headroom required for their installation in the ceiling. As against this it is not as simple in construction as the displacement type heater.



BECAUSE the flow of hot water from the cylinder is purely by gravity, this type of cylinder must be located with bottom at least 3 feet above the highest hot water outlet. This practically confines the installation to the roof space.

## ● THE MAINS PRESSURE TYPE SYSTEM

## GENERAL NOTES

As its name implies, this system is connected directly to the cold water supply, no feed tank being required.

A strongly constructed heater cylinder is therefore necessary to withstand the high pressure. Apart from these differences, the mains pressure system is similar to the displacement type system in that heavy heat insulation is used, and the heating element is controlled by a thermostat.

## ● SELECTING CAPACITY OF HEATER

Since the storage water heater heats and stores water for use as required, it is essential that care should be exercised in choosing a heater which will meet all the likely needs of the family. The size of heater to be installed will be influenced by many factors:

- Number of people to be catered for
- Size of house
- Income of customer
- Provision for guests or increase in the number of people to be served
- Conditions of use—maid employed, etc.
- Hot water services in flats supplied by landlord from common central reservoir in such cases allow approximately 40 per cent. more capacity than for similar individual dwellings.
- Climatic conditions.

## ● OPERATING COSTS

Supply Authorities offer specially low rates for electricity supplied to storage hot water systems. When taken into consideration with the inherent high efficiency of the electrical system, these rates make water heating by electricity a particularly attractive and economical proposition.

There are two general types of rates offered, one for "continuous" operation and the other for "off-peak" operation. In the case of "continuous" operation, electricity is connected and is available for heating water throughout the whole of the day. The electricity supply

This heater may be located in any position regardless of the levels of hot water outlets, since the head or pressure of water does not depend upon a cold water feed tank.

The system has advantage in simplicity of operating parts and flexibility of location. Its heavier construction may increase the retail price, but this should be balanced against plumbing and all installation costs, which may be comparatively lower than other systems. This type of system is not yet common in Australia.

Each case should be considered separately, but the following will serve as a reasonable basis for estimating the storage capacity required in individual dwellings.

Type of Home or Family	Storage Capacity Required in Gallons		
	(Off Peak Supply)	Cool Climate	Warm Climate
High Income	20	12	10
Middle Income	12-15	10	8
Low Income	8-10	7-8	4

to systems connected for "off-peak" operation is controlled by a time switch which switches the electricity supply on during certain definite hours, usually late at night and early morning; during the remainder of the day the electricity is disconnected. During the period the electricity is disconnected any appreciable loss of heat from the stored hot water in the reservoir is prevented by efficient heat insulation.

Electricity rates for electricity supplied to storage hot water systems are, as a rule, much lower than those charged for ordinary electric power.

Supply Authorities will give full details of rates available in their areas of supply.

## BRIEF SPECIFICATION FOR INSTALLATION OF ELECTRIC STORAGE HOT WATER SYSTEMS (Other than Mains Pressure Heaters)

## ● ERECTION OF HEATER

1. The heater shall be—
  - (a) Erected to permit ease of servicing.
  - (b) Erected as close as possible to outlets in the following order of preference: kitchen, scullery, bathroom, rooms with hand basins, laundry, other rooms.
  - (c) Erected in such a position that the hot water pipe run to the kitchen sink does not exceed 35 feet.
2. Drain pipes from drip trays shall be not less than 2 in. galvanised iron downpipe. All circumferential joints shall be soldered and all longitudinal joints shall be on top of the pipe. The pipe shall have an even fall to the exterior of the building and shall finish in a noticeable position.
3. Drip trays shall be provided under heaters or cold water feed tanks in the ceiling and shall have a fall not greater than 1 in 72 towards the drain outlet.
4. Where the heater is exposed to weather it shall be enclosed in a weatherproof casing, and extra thickness of heat insulation provided.
5. Where the heater is erected above the ceiling the following precautions shall be taken:
  - (a) The heater shall, where possible, be supported on a platform constructed so that the weight of the reservoir is distributed over two or more walls. In such cases the platform should be constructed so that the reservoir is supported on the ceiling joists.
  - (b) Where it is not possible to distribute the weight of the heater over two or more walls, reservoirs up to 100 gallons may be erected centrally over a single brick wall if the ceiling joists cross the wall at right angles and when the total weight of heaters up to 85 gallons can be distributed over at least three 4 x 2 ceiling joists and of 100 gallons over four 4 x 2 joists.

## ● PLUMBING

1. All hot water pipes should be of copper or suitable copper alloy.
2. Sizes and gauges of hot water pipe and recommended methods of connection are:

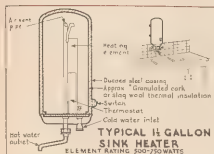
Method of Connection	Minimum Gauge of Tube SWG	Outside Diameter of Tube in Inches		
		Main Hot Water Pipes (inches)	Main Feed to Bathroom (inches)	Branches Feeding Separate Casks (inches)
Tinned, screwed into fittings, and sweated . . . . .	16	$\frac{1}{2}$	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$
Brazed . . . . .	18	$\frac{1}{2}$	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$
Compression type coupling joints . . . . .	18	$\frac{1}{2}$	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$

3. Hot water pipe runs shall be the minimum length to suit requirements.
4. Hot water pipes shall be lagged with efficient heat insulating material, such as hessian corded hair felt securely bound with copper or galvanised tie wire, as follows:

Position	Lagging
Beneath floors and between ceiling and roof . . . . .	* (A) $\frac{1}{2}$ in. (See note below)
Cavity brick walls . . . . .	$\frac{1}{2}$ in. Should be protected by Sisalkraft covering bound by copper wire.
Buried or concealed behind a plastered or tiled wall . . .	* (B) $\frac{1}{2}$ in., protected by hessian or canvas covering. (See note below)
Concrete floors or ceilings . . . . .	* (C) $\frac{1}{2}$ in., laid in channels, or if set in concrete, encased in galvanised iron downpipe (See note below)
Exterior of building . . . . .	* (D) $\frac{1}{2}$ in., encased in galvanised iron downpipe made weatherproof. (See note below)
Underground . . . . .	* (E) $\frac{1}{2}$ in., encased in galvanised iron water pipe. The ends and joints of pipe to be properly sealed against entry of moisture. (See note below)

\* Lagging practice varies in the northern and southern States due to differences in average ambient temperatures. See the following table for the recommended pipe lagging thicknesses for different temperatures.

### ● SMALL STORAGE WATER HEATERS



Small storage heaters of 1 to 12 gallons capacity are available for providing a ready and constant supply of hot water at the kitchen sink or hand basin.

This type of heater is automatic in operation, the electricity supply being thermostatically controlled. The thermostat is usually set to deliver water at 160 deg. F. to 170 deg. F. In addition to the thermostat a manual switch is also fitted to the heater. The heater is made for operation with a free hot water outlet, the control cock being fitted in the cold water supply adjacent to the heater.

An efficient lagging of slag wool or other heat insulating material is provided. The outer case may be obtained in various finishes. Brackets for mounting the heater directly on the wall are also provided. The rating of the heater is usually from 500 watts to 750 watts, permitting connection to the ordinary power circuit wiring.

This type of heater has proved most popular for supplying hot water at the kitchen sink. Other applications are: handbasins, hairdressing saloons, washing sinks in shops, and many other applications where a small ready supply of hot water is required. They may also be used in conjunction with hot water services to supply hot water at isolated points.

### ● INSTANTANEOUS WATER HEATERS

Both automatic and manually-operated electric instantaneous water heaters are available. In both types of heater the element is in direct contact with the water and heat transfer to the water is effected without a tank. The instantaneous type of heater is usually rated at 8 to 13 kilowatts, making 3 or 4-wire connection from the street mains to the house necessary. Some supply authorities place limitations on the use of these heaters. It is advisable to consult the local electricity supply authority as to its policy.

### ● AUTOMATIC INSTANTANEOUS HEATERS

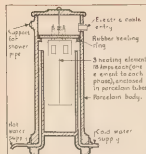
The automatic type of heater is suitable for supplying a number of hot water outlets. Hot water cocks are fitted at each outlet as in any hot water system. The heater operates at water mains pressure. It is usually arranged for wall mounting and should be placed as close as possible to the outlets to be served.

Where the heater is giving a complete hot water service it should be placed as near as possible to outlets in the same order of preference as given for storage hot water systems.

The automatic heater is usually enclosed in a metallic case finished in either chromium plate or various colours of baked enamel, depending upon the type of heater. The shapes of heater vary from tubular to box type. Small box types suitable for recessing are available.

Automatic heaters incorporate a switch operated by the opening of any hot water tap.

### ● MANUALLY OPERATED INSTANTANEOUS HEATERS



DIAGRAMMATIC DETAILS OF  
MANUALLY OPERATED  
INSTANTANEOUS WATER HEATER

The manually operated instantaneous water heater is suitable for supplying hot water in one location only, e.g., bathroom, kitchen sink, etc. This type of heater has a free hot water outlet, the control cock being located on the cold water supply side of the heater. Hot water may be supplied to a number of outlets in close proximity to the heater through



A MANUALLY OPERATED  
SINK WATER HEATER

a two, three or four-way cock. The body of the heater may be made of either porcelain or metal and is available in a number of different finishes including chromium plate. The heater is usually arranged for mounting on a bracket attached to the wall or a ledge. A switch for controlling electricity supply to the heater must be provided in close proximity to the heater.

In operating the heater, the water control cock must be opened before the switch is closed.

### ● OPERATING COSTS

Special rates are not usually offered for electricity supplied to instantaneous water heaters. Their inherent high efficiency, however, enables them to compete successfully with other forms of water heating where the demand for hot water is not large.

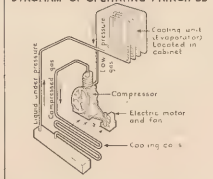
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The basis of any refrigeration system is the absorption of heat by an evaporating liquid. A refrigerator may be considered as a "heat pump" extracting heat from the refrigerator cabinet and discharging it into the air. There are two main systems of extracting this heat—the compression system and the absorption system. In the compression system the "heat pump" is usually driven by an electric motor and in the case of the absorption system by a "heat engine" usually in the form of a small boiler.

### ● THE COMPRESSION SYSTEM

DIAGRAM OF OPERATING PRINCIPLE



A TYPICAL DOMESTIC COMPRESSION TYPE MOTOR-DRIVEN ELECTRIC REFRIGERATOR



The electric motor is many times more efficient as a prime mover than any heat engine and in consequence the performance and efficiency of the motor driven compression machine is much better than absorption heat driven machines. That is why the compression system holds an almost undisputed position in industrial and commercial refrigeration where performance and economy are of prime importance. Performance and economy are also important in domestic refrigeration and the electric compressor type refrigerator leads in these two characteristics.

### ● SPACE FOR INSTALLATION — DIMENSIONS

There is a wide range of electric refrigerators available and it is not possible to give full details of external dimensions for each make. The following are the maximum space requirements for the electric motor-driven refrigerators available in this country.

Storage Capacity (Cubic Feet)	Minimum Space Required		
	Height* (Inches)	Width* (Inches)	Depth* (Inches)
Up to 3 . . . . .	53	24	28
Above 3 to 4 . . . . .	56	27	26
" 4 to 5 . . . . .	59	27	26
" 5 to 6 . . . . .	62	31	27
" 6 to 7 . . . . .	65	31	29
" 7 to 9 . . . . .	70	35	29
" 9 to 12½ . . . . .	72	40	33
" 12½ to 20 . . . . .	77	61	33

\* Includes minimum of 4 ins. over top of refrigerator for air circulation.

† If refrigerator is built in, at least 3 ins. clearance extra required on sides for air circulation.

‡ Includes minimum of 1 ins. clearance at back for air circulation.

### ● SELECTING CAPACITY OF REFRIGERATOR

The capacity of a refrigerator required to provide for a given number of persons varies considerably with the personal habits of the users and it is therefore difficult to give an accurate indication of the capacity which should be installed for a particular size of family. The following table will, however, serve as some guide to minimum requirements.

Number of Persons	Minimum Storage Capacity Required in Cubic Feet
2	3 to 4
3-4	4 to 5
5-6	5 to 7



### ● COST OF OPERATION

The cost of operating a modern electric motor-driven refrigerator is less than one-half that of other types. The average size of domestic motor-driven machine for the smaller families' uses would consume less than one unit of electricity per day.

### ● PERFORMANCE

The motor and compressor on the motor-driven machines are of sufficient size to assure low cabinet temperature and fast freezing under the hottest weather conditions and to give quick pick-up after defrosting. Other types of refrigerators do not have this reserve power.

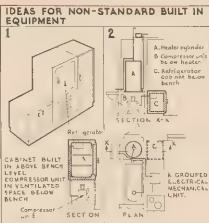
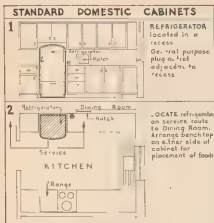
### ● AUTOMATIC OPERATION

The temperature in the electric motor-driven refrigerator is maintained at a low level under all weather conditions by automatic control.

### ● INTERIOR LIGHT

In addition to the usual interior fittings, the electric refrigerator usually has an interior light switched on by the opening of the refrigerator door. No other type of domestic refrigerator possesses this feature.

## ● INSTALLATION SUGGESTIONS FOR COMPRESSION TYPE (Motor-Driven) REFRIGERATORS



### ● THE ABSORPTION SYSTEM

The absorption type refrigerating system consists of an arrangement of pipes and vessels charged with certain quantities of distilled water, ammonia and hydrogen, and hermetically sealed. In the electric absorption type refrigerator the necessary heating of the gaseous mixture is performed by a low wattage element.

#### OPERATING COSTS.

Some electricity supply authorities offer special low rates for the electric heating element type refrigerator. This makes them an economical proposition within the limits of performance inherent in machines of this type.

### ● FACTS ABOUT FOOD PRESERVATION

Bacteria which cause food decomposition multiply at an enormous rate. It has been established that a single bacterium under normal conditions will multiply 1,000,000,000 times in 16 hours.

Below a temperature of 45 deg. F., the growth of bacteria is greatly retarded. Between 45 deg. F. and 50 deg. F. they grow at a slightly greater rate, and above 50 deg. F. the bacteria multiply prolifically. Perishable foods should be stored in temperatures not over 50 deg. F., and preferably below 45 deg. F. Electric refrigerators have the extra reserve of power which ensures cabinet temperatures below 45 deg. F. under the most extreme weather conditions.

Electric heat-driven machines possess the following advantages over other types of absorption machines:

- Low maintenance troubles.
- No fumes.
- No burner trouble.
- No flame to blow out.

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### ● THE ELECTRIC IRON

The ordinary domestic iron weighs approximately 6 lbs. Laundry irons weighing approximately 7½ lbs. and tailors' irons up to 15 lbs. in weight are also available.

### ● THE IRONER

The electric ironer for domestic use is usually of the rotary type and consists of a motor-driven padded roll and a large steel electrically heated steel shoe. The shoe is moved in and out automatically when starting or stopping. Models are available on separate stands or for attachment to washing machines. Accommodation space: approx. 5 ft. wide, 3 ft. 4 in. high, 2 ft. 6 in. deep. Wiring: flexible and plug to general-purpose wall outlet with switch.

### ● THE WASHING MACHINE

THERE ARE TWO MAIN TYPES OF ELECTRIC WASHING MACHINES

#### (a) WRINGER TYPE

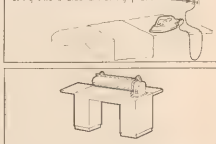
In this type the clothes are moved through hot water by an agitator. Water is removed from the clothes by passing them through a motor driven wringer which is reversible and can be set in any desired position. A safety release is provided and springs are fitted to keep automatic pressure on the rollers. It is normal to plan a hot water tap adjacent to the machine with hot water to permit the domestic machine will wash about 5 lbs. of dry clothes at a time in a single dry sheet (washes 1 lb.). Accommodation space: approx. 5 ft. diameter, in front of tub. Wiring: flexible and plug to general-purpose wall outlet with switch.

Efficient washing does not require hot water, in fact, for general washing, better results are obtained with water at about 140 deg. F. Electric washers with heating elements which enable the water to be boiled are, however, available.



Motor-driven wringer  
Reversible and fitted with safety release to prevent damage to clothes.  
Washing tub of vitreous enameled metal or corrosion resistant metal.  
Agitator designed to move water efficiently to boiling movement.  
Electric motor, mounted to minimize vibration.  
Swivel casters

Wiring outlet - locate general purpose outlet at right hand side of ironing position.



#### (b) SPINNER DRYER TYPE

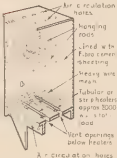
Various types of machines have been developed, such as the automatic spinner washing tub with agitator, spinner dryer, and another type wherein the perforated spinner dryer rotates in hot water for clothes washing and by rotation at high speed (after washing water has been drained off) for drying.  
Fully automatic home laundries of this type have been developed. These are connected to the hot and cold water supply and electricity supply. The complete operation of washing, rinsing, bluing, and drying, is automatically performed. Accommodation space: approx. 5 ft. 8 in. wide, 3 ft. high, 2 ft. 6 in. deep. Wiring: As for wringer type.



Washing tub  
Agitator  
Net cover of perforated corrosion resistant metal. Used for rinsing and damp drying.  
Electric motor and gears concealed behind casing.  
Swivel casters

### ● THE DRYING CABINET

The problems of drying clothes is important in hotels, hospitals, homes, etc. where interruption to drying by inclement weather can cause great economic loss.  
The electric clothes drying cabinet can be made to suit any requirements. Heat is usually provided by low temperature heating elements fitted at the bottom of the cabinet.  
A drying cabinet 3 feet high 4 feet wide and 48 inches deep will provide the equivalent of approximately 30 cubic feet drying capacity. The rating of such a cabinet would be approximately 2 to 4 kilowatts.  
Detailed information may be obtained from your Electricity Supply Authority.



### ● THE WASH BOILER

The heating element in the electric wash boiler is immersed directly in the water and is covered by a baffle which prevents contact with the clothes.  
Models are available with boilers of 10 and 25 gallons.  
The 10 gallon boiler is usually fitted with elements of 1.5 kW rating and the larger with elements of 4 to 6 kW rating.

The water and clothes are brought to the boil with the full element on and boiling is maintained usually for a period of 15 minutes with only a portion of the element switched on.

A wash boiler, with a 4 kW element, fitted with 8 gallons of water at approximately 120 deg. F. from the hot water service will boil in 25 to 30 minutes.  
A 4 kW element will boil 16 gallons of water and 6 lbs. of clothes from cold in 40 to 45 minutes.  
Space required 36 in. high x 24 in. wide x 24 in. deep.



## ● TYPES OF APPLIANCES

## ELECTRIC FIRES

Ratings of 1 or 2 kilowatts.  
 (1) The portable type, or radiator, is connected by a flexible lead and three pin plug to a three-pin general-purpose outlet with switch.

(2) This kind of wall fire is designed for permanent connection to the house wiring. If the wall is not of fire-resistant construction, the fire case and surround should be lined with a fire-resistant material such as fibre cement sheathing.

## (3) FAN HEATERS

Ratings of 2 to 2½ kilowatts. Connected by a flexible and plug to a general-purpose outlet and switch. A fan blows air through a heating element, and lowers control direction of warm air stream. Some and wall mounting types have been developed. Provision for humidifying air included in some models. Efficient means of quickly raising room temperature.

## (4) TUBULAR HEATERS

These consist of 2 in. diameter steel tubes, usually finished in black or brown, and containing heating elements of a rating normally of 60 watts per foot run. Higher wattage per foot available on special order. Standard lengths are 1 foot, 2 feet, 4 feet, and up to 18 feet, in 1 foot intervals. The longer lengths are usually 1 foot thick short 1 in. Total wattage is calculated on unit size and type of room. Tubes are available mounted at skirting level. Wiring provision may be either:

- (a) Permanent connection with conduit entry

- (b) Permanent connection with entry suitable for tough rubber flexible.  
 (c) Flexible and plug to general-purpose outlet and switch.

## (5) SMALL CONVECTOR HEATERS

Small portable convector heaters with a maximum rating of 1 kW, and dimensions normally less than 6 in. x 6 in. x 2 ft., are suitable for provision of warmth in confined spaces where the use of pedestal or console heaters is impracticable. Connected by a flexible and plug to a general-purpose outlet with switch.

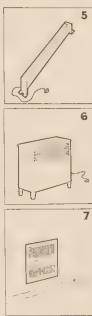
## (6) PEDISTAL OR CONSOLE CONVECTORS

The pedestal or console type convector, with a maximum rating of 2 to 3 kilowatts, is suitable for use where the heating device may be treated as an item of furniture in a room. Paint, colours or imitation grained wood finish may be obtained. Connected by a flexible and plug to a general-purpose outlet and switch.

## (7) BUILT IN CONVECTORS

As with all convector heaters, air is drawn into the lower aperture and is expelled through the upper aperture purely by convection currents set up by the heating element.

Built-in convectors, with a rating of up to 3 kilowatts, are suitable for recessing into walls. Finishing is ideally flush with the wall surface. The wall recess should be finished with a fire-resistant lining. Wiring is by permanent connection.



## ● APPLICATIONS

## CONSIDERATIONS IN SELECTING HEATING APPLIANCES

## THE LIVING ROOM

For a living room which is normally used for a period of several hours at a time, convector heater, or those special forms of it using fan heaters or tubular heaters, is very satisfactory. (Types 2, 4, 6, and 7, above.)

With convector heating, a uniform temperature may be readily obtained over the whole of a room, thus avoiding the necessity for crowding around the heating appliance for comfort.

Convector heaters are not so satisfactory, however, in rooms so shaped that draughts are unavoidable. If the doors and windows of a room are so placed that satisfactory ventilation is difficult to obtain without draughts or, if the occupants of a room insist on excessive ventilation, convector heating is not so suitable as radiant heating obtainable from electric fires.

For convector heating an average sized living room, a convector of not less than 1 kW rating would normally be necessary.

## DINING ROOM

A dining room used for only short periods or customarily used by people moving into it suddenly from a well-heated room could be more satisfactorily heated with an electric fire, because the benefit from a fire is more immediately perceptible and can be appreciated long before the whole of the room is uniformly heated (1 or 2, above).

## ENTRANCE HALL

For a hall, normally a fire, and preferably a built-in fire, is the most suitable, as sudden changes of air with the opening of outside doors would, in most cases, defeat satisfactory use of a convector heater. (1 or 2, above.)

For a small hall, a 1 kW fire would be adequate, and for a large one preferably a 2 kW one should be used.

## STUDY

For a small study or similar room, one or two small convectors or tubular heaters (illustrated in 4 or 5 above) might be convenient.

## KITCHEN

Space may be the determining factor in the choice of an appliance for the kitchen. For the small kitchen with a dining alcove, one of the small convectors placed under the table would prove very satisfactory. A rating of 2 to 3 kW would normally be satisfactory (5, above).

A general-purpose, portable 1 kW fire would be a useful adjunct in the kitchen, as it would be possible to direct it at any working area in which it may be particularly required (1, above).

Where space does not permit of floor type appliances, a 1 kW radiator may often be satisfactorily placed high up on a wall to produce, in effect, artificial sunbathing.

## BEDROOMS

Tubular heaters or convectors under thermostat control are most satisfactory for bedrooms (4 or 5, above). The air temperature can conveniently be maintained all night at any desired minimum during winter months. If only seasonal heating is required, a portable or built-in fire would be more satisfactory (1 or 2, above).

In a bedroom, if a fire is used it could be a useful adjunct in the kitchen, as it would be possible to direct it at any working area in which it may be particularly required (1, above).

This may, of course, be obtained in one or more appliances as desired.

## BATHROOM

A built-in fire of 1 kW rating, with permanently connected wiring, will provide comfortable radiant heating. A portable heater should not be used in a bathroom under any circumstances.

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## ● FUNCTION OF LIGHTING IN THE HOME

Domestic lighting may be provided either by a system of general lighting or localised lighting, or a combination of both.

## A. GENERAL LIGHTING



The function of General Lighting is to provide a reasonable level of illumination throughout the room. The recommended minimum general illumination for living rooms is 5 foot candles. This illumination is inadequate for critical visual tasks such as reading, study, sewing, food preparation, etc.

## Measurement of Illumination

The illumination falling upon any area is measured in units called the FOOT-CANDLE (f.c.). Small, pocket "Light Meters" are available for simply and speedily recording approximate levels of illumination. A pocket light meter is accurate in cost, and is recommended as standard equipment for every architect's office. However, where a pocket light meter is only temporarily required, the Local Electricity Supply Authorities will make a meter available to architects, upon request, or will carry out a lighting survey.

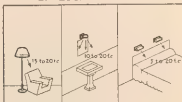


## ● PORTABLE LOCAL LAMPS NEED PLUG OUTLETS

Portable local lamps are becoming very popular, because of their combined utilitarian and decorative functions.

The house wiring should be planned to accommodate a reasonable number of such lamps, and for this purpose additional general-purpose outlets should be provided as follows:

## B. LOCAL LIGHTING



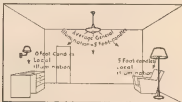
The function of Local Lighting is to economically provide a higher level of illumination over the limited areas where critical visual tasks are carried on.

## Recommended minimum local illumination on levels area:

Kitchen (Food Preparation) . . . . . 10 f.c.  
Reading, Writing, Sewing, Study . . . . . 15 f.c.  
Dressing Table, Bathroom Mirror . . . . . 10 f.c.

## ● AVOID BRIGHTNESS CONTRASTS

Local lighting alone is not satisfactory. For comfortable seeing the surroundings must also be illuminated to a reasonable level of illumination, otherwise the severe light-dark contrasts between the local lighting and the surroundings will cause rapid eye fatigue.



## THE MOST USEFUL PORTABLE LAMP

Carefully designed by Illuminating Engineers to give adequate, diffused illumination.

Opal glass diffusing bowl diffuses downward light, and prevents glare. The open top of the bowl provides general indirect illumination around the room and thus reduces brightness contrasts with the light below the lamp.

The lamp is shaded from direct view.

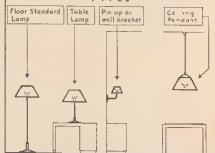
The shade is white lined to reflect a maximum of light downward, and carefully dimensioned to provide a good spread of light over chair or table.

Available in floor, table, wall bracket, and suspended ceiling types.



Popularly called "the Better Night Lamp."

## TYPES

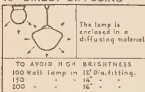


## ● GENERAL LIGHTING

## SUITABLE TYPES OF GENERAL LIGHTING FITTINGS

Specify Lighting Equipment to comply with the Code of Performance of Domestic Lighting Fittings, issued by the Standards Association of Australia.

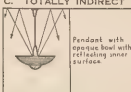
## A. DIRECT DIFFUSING



## B. SEMI-INDIRECT



## C. TOTALLY INDIRECT



## ● A GUIDE TO SELECTING FILAMENT LAMP WATTAGES

A general illumination of approximately 5 foot-candles will be obtained under these conditions:

	Room Areas		
	10ft. x 10ft.	10ft. x 12ft.	12ft. x 12ft.
	Recommended Lamp Wattage		
Direct Diffusing	100	100	150
Semi-Indirect	100	150	200
Totally Indirect	150	200	300

Incandescent filament lamps should be of the inside-frosted type to reduce glare and soften shadows. Where portable or fixed local lighting is also provided at work areas, 3 to 4 foot-candles could be planned for.

## ● INTERIOR DECORATION



Light tones or pale pastel tints, reflects light and reduces brightness contrasts

Dark colours absorb light, and present high brightness contrasts

This table gives the equivalent sizes of incandescent filament and hot cathode fluorescent lamps. Cold cathode fluorescent tubes vary in size and shape and manufacturers will supply all information on request.

Hot Cathode Fluorescent Lamp					
Lamp Watts	Total Watts Inc. Losses	Lamp Dimensions		Light output in Lumens Warm White Lamp	Wattage required to provide equivalent light output from Incandescent Lamp
		1st. dim.	Length		
20 W	28 W	13 in.	2 ft.	860	75 W
40 W	56 W	1 1/2 in.	4 ft.	2,100	150 W
2 x 40 W	96 W	1 1/2 in.	4 ft.	4,200	270 W
100 W	135 W	2 1/2 in.	5 ft.	4,800	270 W

## ● HOT CATHODE FLUORESCENT LAMPS

## DETAILS OF LAMP AND AUXILIARY EQUIPMENT



## COMPARISONS WITH INCANDESCENT FILAMENT LAMPS

Capital Cost: 3 to 5 times more than filament lamps.  
Maintenance: More complicated, but life twice that of filament lamps.

Auxiliary Equipment: Chokes (i.e., ballasts), starter switches, should have access for maintenance.

Switching: Life of lamp shortened by frequent switching. Do not install for such positions.

Standard Fittings: Standard domestic fittings not yet readily available (1947).

Operating Costs: Half to one-third that of filament lamps for same light output.

Lighting: Better quality than filament lamps.

Applications: Special built-in features, such as indirect coves, curtain pelmets, kitchen bench lighting.

Colour: Cold near-daylight colour. Some distortion of reds, yellows and greens. Warm-tinted lamps should become available in the future.

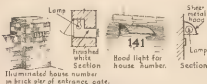
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## ● SUGGESTIONS FOR LIGHTING IN THE HOME

## EXTERIOR

Luminous house numbers.

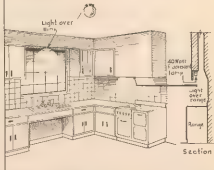


## ENTRANCE PORCH



Downlight on flower box, and semi-flushed unit over entrance door.

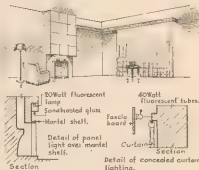
## KITCHEN



## LIVING ROOM

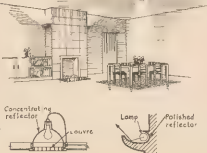


Indirect lighting built into chimney breast.



Detail of concealed curtain lighting.

## DINING ROOM

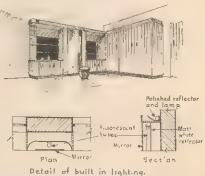


Detail of typical louvre downlight over Dining Room table.



Detail of indirect light bracket to chimney breast.

## BED ROOM



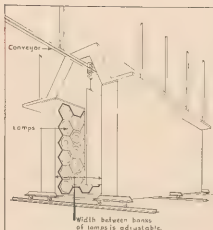
Detail of built in lighting.

## ● DRYING AND BAKING OVENS

For drying chemicals, paints, etc.  
 " " cosmetics, sweets, etc.  
 " " leather  
 " " textiles  
 " " (armatures, coils, windings, etc.,  
 " " baking ducos and enamels)  
 " " foundry cures  
 " " food processing

Electric ovens are built in Australia to suit any industrial process because the electrical method can be applied to convection ovens, air-recirculation ovens, or infra-red type, and to a combination of any two of these. Such ovens offer several advantages over other forms of heating in that no external heating chambers or combustion fues are required, no storage space for fuel, and no disposal of ashes is necessary, and the heat loss is reduced to a minimum by efficient heat insulation. Such loss is confined to the radiation from outer walls plus the loss in required air changes and in heated conveyor mechanisms necessarily taken outside the insulated oven walls.

In the case of air recirculation or convection ovens, even heat distribution is obtained by adequate movement of the air and by the use of automatic temperature control. With infra-red type ovens the correct locating of the heating units so as to direct a uniform intensity of radiant heat on all parts of the work ensures even heating, and although adequate air changes are provided to remove solvents or moisture, the infra-red heating rays pass through the air without appreciably increasing its temperature. Correctly designed and built electric ovens ensure uniform production in clean and cool production lines.



A TYPICAL INFRARED OVEN

## ● ELECTRIC FURNACES

Electric furnaces are available in Australia for the following processes:—

Melting Ferrous and Non-ferrous alloys.

Firing of Ceramic products.

Heat Treatment of Ferrous alloys, and of all types of Non-ferrous alloys.

The appropriate electric furnace for a particular application needs consideration but, having selected correctly, the manufacturer is assured of high quality products at all times.

Available types are single-phase and three-phase are furnaces, box type and salt bath type for heat treatment of all alloys, resistance type for the melting of alloys, and low frequency induction and high frequency induction for the appropriate melting or heat treatment operation.

## ● STEAM GENERATORS

Electric steam generators are used for supplying steam to clothing presses, steam electric irons, millinery workrooms, steam-jacketed pans for cooking, chemical processes and jam making, hot rolls and platens, and building heating. The compactness, cleanliness and absence of fire risk of the electric steam generator result in its extended use in commercial and industrial premises. Entirely automatic in operation, it requires no labour for attention, firing, or cleaning, no space for storage of fuel or ashes, and avoids the use of skilled labour. For purposes of comparison, it may be taken that 10 kW is approximately equal to one boiler h.p. and that one kWh (unit) of electricity will evaporate approximately 3 lbs. of water per hour.

## ● HOT WATER SUPPLY AND THERMAL STORAGE HEATING SYSTEMS

The provision of hot water in factory and large commercial premises is economically catered for by the use of "off-peak" hot water storage systems. These range in size from the domestic size (45 gallon storage tank) up to capacities of 1,700 gallons. Heat is stored in the water during a restricted period, usually from about 10 p.m. to about 8 a.m., and the hot water gravitated to the required point of use.

## THERMAL STORAGE HEATING OF BUILDINGS

The principle of electrically heating water during restricted periods in large storage vessels has been utilised in the electric thermal storage heating of buildings. In the small to medium installation the hot water is supplied to standard hot water radiators or other appropriate heat exchangers mounted in the air ducts or rooms. In the larger schemes use is made of electric steam generators supplying steam to standard types of heat exchangers and the heat is then used in standard equipment as used in the more generally known fuel-fired central heating schemes. The elimination of labour and fuel handling, by the use of fully automatically controlled thermal storage schemes has many advantages. Operating costs are economical and the practice adopted in England and in Europe can well be repeated in Australia, particularly in the more temperate zones.

## ● GENERAL

Architects and other interested parties are requested to consult the local supply authorities regarding the availability, the charges, and the restrictions applicable to "off-peak" supply for hot water storage systems and thermal storage heating.

Lighting installations in industrial and commercial premises should be designed in accordance with Code No. (E) CA. 501 for the Interior Illumination of Buildings by Artificial Light issued by the Standards Association of Australia.

In the case of new buildings, it is important that the lighting installation be carefully planned originally. Alterations at a later date are often difficult and costly.

## ● CONSIDER LIGHTING UNDER TWO ASPECTS

The problems of lighting may be considered under the two main headings.—Values of Illumination; Planning the Lighting Installation (quality of lighting).

A lighting installation which provides satisfactory values of illumination but poor quality lighting will never be acceptable to staff or customers. Conversely, good quality lighting without an adequate value of illumination is not satisfactory.

The quality of the lighting may be said to be poor when visual discomfort is experienced. Poor quality lighting is usually caused by large differences in brightness in the visual field, e.g., an unshielded lamp bulb, a lighting fitting which is too bright, dark walls or ceiling, light reflections from glossy surfaces or table tops. For visual comfort excessive brightness differences should be avoided.

## ● VALUES OF ILLUMINATION

The value of illumination to be provided will depend on the type of work being carried out. More exacting visual work requires more light. In large stores, where competition is keen, goods must be more attractively displayed. Goods look better under higher values of illumination.

## THREE METHODS OF LIGHTING

There are three methods of obtaining the required value of illumination, viz., general lighting, localised general lighting, and general plus supplementary lighting, each having their application.

### GENERAL LIGHTING

General lighting is a system of lighting arranged to produce approximately uniform illumination over an area.



### LOCALISED GENERAL LIGHTING

A modification of general lighting with the light sources arranged, with respect to machines, benches, desks or counters, to give increased illumination or a preferred direction of light for the more important areas.



**GENERAL PLUS SUPPLEMENTARY LIGHTING:** Supplementary lighting used in conjunction with general lighting for providing increased illumination over small areas, by light sources usually placed close to the work or area. The supplementary lighting provides little, if any, general illumination and is therefore suitable only to supplement general lighting.



## RECOMMENDED VALUES

Extract from Draft Code "Interior Illumination of Buildings" by courtesy of Standards Association of Australia.

Industry	Foot-Candles	Industry	Foot-Candles
<b>Assembly Shop—</b>		<b>Textile Mills (Woolen)</b>	
Rough . . . . .	8-10	Opening, Carding, etc. . .	5
Medium . . . . .	10-15	Drafting, Ring Spinning, . .	
Fine . . . . .	15-25*	Warping, Light Goods, . .	
Extra Fine . . . . .	25-50*	etc. . . . .	5-10
<b>Bakery . . . . .</b>	<b>5-10</b>	Warping Dark Goods . .	10-15
<b>Chemical Works . . . . .</b>	<b>5-10</b>	Drawing Frames . . . .	15-25
<b>Cloth Products—</b>		<b>Weaving—</b>	
Cutting, Sewing, etc.—	15-25*	Looms . . . . .	10-15
Light Goods . . . . .	15-25*	Burling, Mending . . .	25-50*
Dark Goods . . . . .	25-50*	Perching . . . . .	above 50*
<b>Die Sinking—</b>		<b>Commerce, etc.</b>	
General . . . . .	25-50*	Auditorium . . . . .	5
Fine . . . . .	above 50*	<b>Banks</b>	
<b>Engraving . . . . .</b>	<b>above 50*</b>	Lobby . . . . .	10
<b>Flour Milling—</b>		Cages . . . . .	25-50*
General . . . . .	5-10	<b>Drawing Offices—</b>	
Grading . . . . .	15-25*	Rough Sketching, etc. . .	15-25
<b>Foundries—</b>		Prolonged Close Work, . .	
General . . . . .	5-10	Detailed Design . . . .	25-50
Fine Moulding, etc. . . .	15-25*	<b>Hospitals—Wards . . . .</b>	<b>5</b>
<b>Inspecting—</b>		Operating Room . . . .	
Rough . . . . .	5-10	General . . . . .	15-25
Medium . . . . .	15-25*	Operations . . . . .	above 200*
Fine . . . . .	25-50*	<b>Offices</b>	
Extra Fine . . . . .	above 50*	General . . . . .	10-25
<b>Machinists Shops—</b>		Business Machines, etc. .	25-50*
Rough . . . . .	5-10	<b>School Classrooms . . . .</b>	<b>15-25</b>
Medium . . . . .	10-15	<b>Stores Interiors</b>	
Fine . . . . .	15-25*	City, Main . . . . .	25-50
Extra Fine . . . . .	25-50*	City, Secondary . . . .	15-25
<b>Printing—</b>		Suburban . . . . .	10-15
Matrixing, Casting, etc. .	10-15	<b>Show Windows—</b>	
Lithography, etc. . . .	15-25*	City, Main . . . . .	above 100
Linotype, Type Setting .	25-50*	City, Secondary . . . .	50-100
Proof Reading, etc. . . .	25-50*	Suburban or Country . .	
		Towns . . . . .	50

\* General plus supplementary lighting recommended

NOTE.—Recommended illumination values for tasks or buildings not covered above can be obtained from electricity supply authorities.



## ● PLANNING THE LIGHTING INSTALLATION

### BRIGHTNESS CONTRASTS

The lighting installation, the finish and colour of walls, ceilings, furniture and machinery should all be designed to avoid excessive brightness contrasts. A certain degree of contrast between the visual task and its immediate background is necessary for good visibility. Visual comfort, however, requires that the general surroundings should be neither too dark nor too bright as compared to the visual task and its immediate background.

## CONSIDERATIONS TO ENSURE VISUAL COMFORT

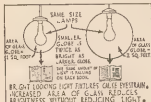
### 1. LIGHTING EQUIPMENT

- Should all lamps be free from angles of sight of 90° or more to glare by reflecting them to suitable diffusing fittings. This applies equally to all light sources, including fluorescent lamps. (The S.A.A. Code for the Interior Illumination of Buildings is an excellent guide to the selection of lighting fittings for the avoidance of excessive brightness.)

### OPEN-TYPE OF REFLECTORS WITH ADEQUATE SHIELDING OF THE LAMP



R.L.M. or Dispersive. Deep bowl. Concentrating.

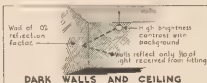


- Install lighting fittings as high as possible. This will tend to place them outside of the normal angles of vision.
- Where long rows of lights are in the direct view of operatives the fittings should be so placed that low brightness or glare is avoided.
- Where rows of lights are in the direct view of light should be directed so as to be seen against a lighted ceiling (i.e., the brightness contrasts are kept to a minimum).
- Where highly specular surfaces (such as polished metal) form the visual task, low-brightness diffusing fittings should be installed and, if possible, locate the light sources behind the work area.



### 2. ROOM CONDITIONS

- Finish the ceiling and upper walls in a pale, matt colour of at least 70 per cent. reflection factor. This will reduce the absorption or loss of light, and reduce the brightness contrasts between the lighting fittings and their backgrounds.



DARK WALLS AND CEILING



LIGHT WALLS AND CEILING

- Finish the lower wall or dado in a medium colour of 25 per cent. to 40 per cent. reflection factor.
- Use light to medium finishes on work benches, desks, etc. This also assists to reduce brightness contrasts.
- Finish the immediate work areas on machines in a light colour of approximately 60 per cent. reflection factor, and the rest of the machine in a medium colour of 25 per cent. to 40 per cent. reflection factor. This treatment will assist visibility of the task and also reduce brightness contrasts.
- Avoid glossy or polished surfaces on work areas. Such surfaces reflect the concentrated image of the light source and the resultant reflected glare is most distressing. Plate glass desk tops, french polish, varnish and glossy enamels or paints are dangerous finishes in this regard.



SUGGESTIONS FOR  
LIGHTING THE OFFICE

The general requirements outlined above for comfortable vision also apply to offices. There are, however, certain other factors which should be taken into consideration.

- (a) In individual offices avoid placing the lighting fitting in front of the table position. With the light source in this position reflected glare from glossy and semi-glossy papers is likely to be troublesome. Place the lighting fitting to the left-hand side and just inside the back edge of the table, or, better still, use two fittings, one on either side.
- (b) In drawing offices use very well diffused light.

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## SUGGESTIONS FOR SCHOOL LIGHTING

- (a) It is difficult to place fittings so that they are not in the line of vision of students. Care should therefore be taken to use fittings of low brightness. If diffusing fittings are used, specify brightnesses not more than 75 per cent. of those specified in the S.A.A. Code for the Interior Illumination of Buildings.

- (b) Provide for local lights directed on to blackboards and charts.

## SUGGESTIONS FOR STORE LIGHTING

- (a) Arrange the lighting over the counters if possible. This will avoid customers casting a shadow on goods which they are inspecting.
- (b) Use fittings which direct a large proportion of their downward light on to the goods.
- (c) See that the ceiling is adequately lighted, otherwise the interior may appear heavy and oppressive.
- (d) Allow adequate plug outlets for a flexible, display lighting system.
- (e) Allow plug outlets for spot lights and display lighting in the show-windows.

A SUMMARY OF RECOMMENDED VALUES OF  
ILLUMINATION FOR VARIOUS VISUAL TASKS

First Column DESCRIPTION OF TASK	Second Column ILLUMINATION IN FOOT-CANDLES
1 Rooms and places in which are performed very severe and prolonged visual tasks such as precision work of a high degree of accuracy, including fine engraving and all tasks requiring rapid discrimination and response.	50 foot-candles or over.
2 Rooms and places in which are performed severe and prolonged visual tasks such as drawing, sewing on dark goods, or discrimination and inspection of fine details of low contrast.	25 to 50 foot-candles.
3 Rooms and places in which are performed moderately critical and prolonged tasks such as fine machine work, fine assembling, sewing on light goods.	15 to 25 foot-candles.
4 Rooms and places in which are performed ordinary visual tasks such as detailed office work, reading and ordinary bench work.	10 to 15 foot-candles.
5 Rooms and places in which are performed less exacting visual tasks such as intermittent office work, large assembly work, packing and storing.	5 to 10 foot-candles.
6 Places used as passages, corridors, stairways and spaces outside working areas.	2 to 5 foot-candles.



The above table is a broad general survey of various seeing tasks and the recommended illumination to facilitate speedy and accurate work. The foot-candles given in the second column may be termed "permanent values," since they are the illumination that

may be expected after the lighting installation has been in operation for some time. Initial illumination should be approximately 1.4 times greater than the values shown to allow for a falling off of illumination due to ageing lamps, soiling of ceilings, etc.

**BAIN MARIE HOT PRESS**

Unit maintains cooked food at serving temperature in bain marie compartment at top. Bottom compartment provides for plate heating or hot food storage.

Available in stainless steel or enamel finishes. Various combinations and sizes of bain marie and carving hot top as required.

Variable heat control in water compartment, and under shelves in hot press. "Zone" heating if required. 4 ft. to 12 ft. models or counter type available.

**HOT PLATES**

Hotplates are available in either radiant type for very rapid heating, or the cast type. Each type is controlled by variable heat switch. Single, double or banks of hotplates are available as stock lines. Larger banks of hotplates for larger kitchens manufactured to order.

Single hotplate models available in various sizes from 750 watts up to 3,600 watts. Fitted with variable heat switch, terminal box and drip tray. Enclosed in cast top vitreous mottled enamel finish.

**TOASTERS**

Available in sizes 2, 3 and 4-slice in double slice toasting models or in 6 and 14-slice sizes in single slice toasting model.

Exterior finish highly polished nickel plate; base, solid castings. Overall sizes for 2-slice model is 9 1/2 in. wide x 16 in. deep x 10 in. high; 3-slice width is 11 1/2 in., and 4-slice width is 13 1/2 in., other dimensions same.

**GRILLERS**

Variety of types available, such as fire type, with heat below the grill; radiant type with heat source above the grill; pressure type with heat on both sides, or charcoal type with bars which bear the meat with marks reminiscent of an open coke fire. Approximate size, 18 in. x 12 in.

**ELECTRIC BREAD, PASTRY AND ROASTING OVENS**

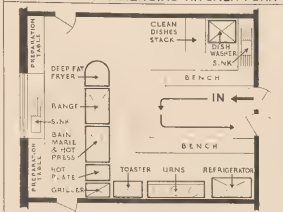
**General Construction** Heavy gauge sheet steel construction. Baked dulux exterior, interior aluminized (Schoop process). Separate top and bottom variable heat control. Fitted with heat indicators, but automatic control may be fitted if required. No chimney required as there is no smoke nor gas. No special ventilation required. From 3 in. to 16 in. rock wool insulation is used for insulating ovens, depending on size and temperature. Counter-balanced, quick-closing doors fitted to all sizes.

**BREAD OVENS**

The area of the heated brick tile sole or hearth is 52 sq. ft., being approximately 65 in. wide x 114 in. deep. Rated at 34 kW, this oven holds 125 loaves each 2 lbs. weight.

Steam fittings can be incorporated, in standard ovens, for steaming Vienna bread. Deck of oven is arranged for easy working height by mounting oven casing on brick or concrete plinth about 2 ft. 6 in. high.

Conveyor type bread ovens—  
500 loaves per hour .. 150 kW  
1,000 loaves per hour .. 300 kW  
1,500 loaves per hour .. 450 kW  
can be built to order.

**A TYPICAL COMMERCIAL KITCHEN PLAN****URNS**

Automatic water boilers are available to deliver from 8 to 30 gallons per hour of boiling water continuously for cafe use. One type is fitted with a steamer attachment to give low pressure steam for injection heating of liquids.

Highly polished nickel plated urns of copper construction are available in 1 gallon to 10 gallon sizes. Compartment urns fitted with porcelain containers in a boiling water jacket with separate taps to each container are available in either 1 or 2 container sizes. Coffee urns with silver plated interior in 1 to 4 gallon sizes to match other cafe equipment are also available.

**FISH FRYERS**

**Advantages**—Automatic temperature control, minimum absorption, elimination of fire hazard, cleanliness and convenience; economy, improvement of product.

**Specification**—Counter Model Kettle: nickel-plated, automatic control, 2-gallon size fitted with basket, draining rack and lid.

**Kitchen Type**: Available in 1, 2, or 3-pen sizes. Pan size, 20 in. x 16 in. x 7 in. deep, capacity, 75 lbs. frying compartment. Load connected is 7.0 to 8.6 kW (depending on make), 3-phases per pan. Available with or without splash back and draining rack. Approximate overall dimensions (with splash back), single pan model, 22 1/2 in. wide x 34 1/2 in. high x 31 1/2 in. deep; 2-pen model, 42 1/2 in. wide, and 3-pen in 52 1/2 in. wide.

**PASTRY OVENS**

Pastry ovens have brick-tile sole, and oven sizes are designed to take standard pastry trays 16 in. x 28 in. Standard legs 30 in. high are provided for single ovens, but where two ovens are mounted one on top of the other, 18 in. legs are used. The lower deck is then 204 in. from the floor level and the upper deck is 524 in. Maintenance is small and amounts to approximately 1 per cent. of oven cost per annum.

Pastry ovens suitable for baking all types of cakes and pastries are listed below:

Size in trays	Approx. Deck Dimensions		Rating kW	Approx. Overall Dimensions		
	Size Inches	Area sq ft.		Width	Depth	Height excluding legs
1	17 x 30	9 1/2	3	24	33	21 1/2
2	33 x 30	7	6.3	43	39	26 1/2
4	33 x 60	14	10	43	69	26 1/2
16	66 x 114	52	34	88	135	34

**Roasting Ovens**—Roasting ovens have sheet steel sole. Dimensions are—overall height, 24 in.; overall height without legs, 24 1/2 in.; overall width x depth, 22 1/2 in. x 30 in., oven dimensions, 17 1/2 in. x 18 1/2 in. h. x 26 in. d.

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## ● CURVED GLASS SHOW CASES

Designed to give uninterrupted display—all refrigeration equipment is concealed in the lower compartment. Curved glass and smooth design and finish give a pleasing appearance. Available in models for grocers, smallgoods, butchers, etc., special wording being incorporated in the illuminated strip-light. Cooling unit is located at top of cabinet obscured from customer's view.

## SPECIFICATION:

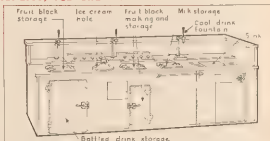
### Approximate Dimensions:

	6ft. size	8ft. size	10ft. size
Overall length ..	4ft. 2in.	4ft. 2in.	10ft. 2in.
Overall height ..	4ft. 0in.	4ft. 0in.	4ft. 0in.
Overall depth ..	2ft. 6in.	2ft. 6in.	2ft. 6in.
Interior length ..	5ft. 7in.	7ft. 7in.	9ft. 7in.
Interior height ..	5ft. 4in.	5ft. 4in.	3ft. 4in.
Interior depth ..	2ft. 0in.	2ft. 0in.	2ft. 0in.
Storage capacity, cu. ft.	40	84	88
Shelf area, sq. ft.	37	42	62

## ● COMBINATION FOOD DISPLAY, ICE CREAM AND MILK STORAGE CABINETS

These present a modern streamlined appearance. Front edges slope back from a substantial base. Models may be equipped with either curved glass surround or plain surround.

Cabinet comprises 5 trays for ice fruit block making with 3 holes storage above. From one to five ice cream holes, 11 cu. ft. food and bottle display storage and 5-gallon milk hole. Frames of welded steel, outside finished in porcelain enamel or baked dulux.



REAR VIEW OF A TYPICAL COMBINATION FOOD DISPLAY, ICE CREAM, MILK AND BOTTLED DRINK STORAGE CABINET.

Model	Cub. Ft.	Ice Cream Holes	Storage Capacity Cu. ft.	Food Tray Area Sq. ft.	Dimensions		
					Length	Depth	Height
No. 1	5	1	11	12	6ft. 2in.	2ft. 6in.	2ft. 11in.
No. 2	5	2	11	12	7ft. 2in.	2ft. 6in.	2ft. 11in.
No. 3	5	3	11	12	8ft. 2in.	2ft. 6in.	2ft. 11in.

Cabinets are also made for considerable variations of capacities of ice fruit block making and ice cream storage. Also, one or more bottled drink compartments and/or food storage compartments together with cool drink fountains, sink, glass washers, server holders, serving ledge, power points, etc., can be provided.

## ● COMBINATION ALL PURPOSES TYPE—ICE MAKING

This type is suitable for general refrigeration storage. Generally favoured in kitchen application, in restaurants, hotels, guest houses, large institutions and hospitals, and also in shops and general stores. The refrigeration unit is placed remote from the cabinet in any suitable position. Ice block making and freezing facilities provided.

### SPECIFICATION

Model	15 G.A.P.	30 G.A.P.	40 G.A.P.
Gross capacity, c. feet ..	15	30	40
Net storage, c. feet ..	13 1/2	28	37 1/2
External width ..	39 1/2 in.	62 1/2 in.	70 1/2 in.
External depth ..	27 in.	27 in.	27 in.
External height, including base ..	61 in.	67 in.	67 in.
Shelf area, square feet ..	13.16	27	28
No. of shelves ..	4	6	6
No. of doors ..	7	13	12
Size door openings, top ..	18 1/2 in. x 11 1/2 in.	20 in. h. x 15 1/2 in. w.	25 in. h. x 17 1/2 in. w.
Size door openings, bottom ..	18 1/2 in. x 11 1/2 in.	20 1/2 in. h. x 15 1/2 in. w.	21 1/2 in. h. x 17 1/2 in. w.
No. ice trays ..	3	6	6

Available in 15, 20, 30, 40, 50 and 75 cu. ft. sizes. Also available in the non-ice making models. All dimensions of refrigerated cabinets are approximate only.

# THE ADELAIDE ELECTRIC SUPPLY COMPANY LIMITED

## ADELAIDE, SOUTH AUSTRALIA

Telegraphic and Cable Address:  
"ADELECT," ADELAIDE.

HEAD OFFICE:

KELVIN BUILDING, NORTH TERRACE, ADELAIDE

Telephone.  
Cent. 3550.

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### EXTENT OF COMPANY'S OPERATIONS

The Adelaide Electric Supply Company Limited, a company with 75 per cent. of its capital held in Australia and controlled entirely in Adelaide, supplies the whole of the City of Adelaide and its suburbs, and, in addition, serves 102 country towns and districts covered by an area of some 4,000 odd square miles with a population of approximately 343,000.

The Power House is situated on the Port River at Osborne, and is recognised as one of the most efficient power plants in the Southern Hemisphere. The capacity of the plant at present installed is 79,000 kilowatts and the maximum demand in 1945 was 76,500 kilowatts.

A second power station, to be known as Osborne B, is in course of construction, and will be put into operation towards the end of 1946. The station is designed for an immediate capacity of 30,000 and an ultimate of 180,000 K.W. This will cope with the estimated power demands for many years.

In the city the low tension supply is 415/240 volts 3-phase 50 cycles, but most of the suburban and country supply is 415 volts 3-phase and 2 x 210 volts single phase 50 cycles. During the next few years this will all be changed to 415/240 volts 3-phase, and it is therefore advisable to refer to the company as to the supply voltage for any proposed building in these areas.

### Country Towns and Districts Supplied by the Adelaide Electric Supply Co. Ltd.

A dgate	Eden Hills	Jamestown	McLaren Flat	Seppekeville d
Angaston	Flinley	Kangaroo	Mylor	Smithfield
Ashton	Fords	Kapunda	Myponga	Stirling
Balskova	Freeling	Kerribrook	Narree	Stockwell
Basket Range	Gawler	Laura	Narunga	Summertown
Beair	Gawler River	Lights Pass	Normanville	Strathalbyn
Blayney	Georgetown	Littleshampton	Norian's Summit	Talunga
Browwood	Gladstone	Lyndoch	Nurioopsa	Tanunda
Blackwood	Gen Ewin	Macclesfield	Owen	Teatree Gully
Blyth	Golden Grove	Mallala	Palmer	Tungah's
Bowmans	Greenock	Manjim	Paracombe	Two Wells
Bradewater	Gulnare	Marangompa	Paradise	Unadilla
Brinkworth	Gumeracha	Meadows	Para Wirra	Virginia Blocks
Catwaite	Hackham	Meana	Piccadilly	Waxley
Carry's Gully	Halsbury	Mobbury	Port Noarlunga	Wheaton
Chain of Ponds	Halsbury	Morphett Vale	Raynella	Woolamstown
Carendon	Hamley Bridge	Mount Barker	Roseworthy	Wunga
Comandant Va ley	Heathfield	Mount Lofy	Rowlands Flat	Yacka
Craigh	Higgincombe	Mount Pleasant	Snowtown	Yalumba
Darriem	Houghton	McLaren Vale	Salisbury	Yankalilla
Eckunga	Ingleswood			

### SERVICE TO ARCHITECTS, BUILDERS AND CONTRACTORS

The Company supplies free of charge a booklet setting out its Rules and Regulations regarding service and metering arrangements, together with the conditions under which electrical energy is supplied.

A Service Department is maintained by the Company, and Officers are available to advise Architects and Consumers regarding any electrical installation problem.

In the case of large power or lighting installations the Company should be consulted regarding the loca-

tion of services and the provision of space for meters and also the switchboard arrangements before specifications are finalised.

The Company will, if necessary, prepare free of charge, a memorandum covering service arrangements for the complete installation and, in addition, provides, without obligation to the consumer, the services of technical officers to advise on the design and layout of lighting, heating, cooking and motor installations.

RAMSAY & LYNALOGUE

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# TARIFFS

For the Adelaide city and suburban areas the following tariffs are available:

NOTE.—Similar tariffs at slightly higher rates are available in the country districts supplied by the Company  
1 Kilowatt-hour—1 Board of Trade unit = 1,000 watt hours

## LIGHTING

### TARIFF "A"

A block-rate tariff suitable for premises where the demand is high and the usage relatively low.

For all consumption between the usual monthly meter readings —

	Per Kilowatt-hour
Up to and including 500 kilowatt-hours ..	54d
For the next 5,500 kilowatt-hours consumed during the same period ..	4d.
For all consumption beyond 5,500 kilowatt-hours during the same period ..	24d

### TARIFF "B"

A maximum demand tariff for commercial and industrial consumers only. Suitable for installations where the lighting averages more than 3 hours' use daily.

For all consumption between the usual monthly meter readings —

	Per Kilowatt-hour
For the first 374 hours' use of the maximum demand in KW ..	1d.
For the first 40 K.W. ..	3d.
For excess demand over and above 40 K.W. ..	1d.
For all further consumption in the same period ..	24d.
(1) If the annual consumption is not more than 2,000 kilowatt-hours ..	24d.
(2) If the annual consumption is more than 2,000 and is not more than 60,000 kilowatt-hours ..	14d
(3) If the annual consumption is more than 60,000 kilowatt-hours ..	1d.

Maximum Demand Indicators used under this tariff are re-set once a year, usually in the month of November.

## COMMERCIAL & INDUSTRIAL POWER & HEATING

A block-rate tariff suitable for factories and commercial premises taking power during ordinary working hours, e.g., shops, offices and factories working one shift.

### TARIFF "D"

For all consumption between the usual monthly meter readings —

	Per Kilowatt-hour
Up to and including 500 kilowatt-hours ..	24d
For the next 600 kilowatt-hours consumed during the same period ..	2d
For the next 1,200 kilowatt-hours consumed during the same period ..	1 24d
For the next 50,000 kilowatt-hours consumed during the same period ..	0.59d
For all above 52,000 kilowatt-hours consumed during the same period ..	0.5d

### TARIFF "E"

A block-rate tariff offering special reduced rates for power consumed at night between 10 p.m. and 8 a.m. (All consumption at other times during the 24 hours charged at Tariff "D.")

For all consumption between the usual monthly meter readings during the hours between 10 p.m. and 8 a.m. —

	Per Kilowatt-hour
Up to and including 2,500 kilowatt-hours ..	0.85d.
For the next 50,000 kilowatt-hours consumed during the same period ..	0.74d
For all above 52,000 kilowatt-hours consumed during the same period ..	0.60d

### TARIFF "F"

An alternative power tariff based on load factor—applicable where electric power is used continuously, e.g., flour mills, cold storage plants, etc.

A monthly charge determined by monthly readings of the Maximum Demand Indicator, per kilowatt 11/- Subject to an annual minimum charge of eight times the highest monthly maximum demand charge.

For all consumption used in connection with this tariff, 115d. per Kilowatt-hour.

Maximum Demand Indicators used under this Tariff are re-set monthly.

A consumer applying to be charged under this tariff will be deemed to have agreed to being charged accordingly for a period of not less than twelve (12) consecutive calendar months and to paying for not less than 20,000 kilowatt per annum.

## DOMESTIC POWER HEATING, COOKING AND COMMERCIAL COOKING

### TARIFF "G"

For all consumption for power and heating in Private Houses, Flats, Boarding Houses, Motels, Hospitals, and similar premises which are used for residential purposes, and for the domestic requirements of sporting and social clubs. For the first 10 kilowatt-hours consumed per month —

	Per Kilowatt-hour
For the first 10 kilowatt-hours consumed per month ..	18d
For all additional consumption during the same period ..	1d
Except that in cases where an approved electric cooker, rated at not less than 2,000 watts, and/or a thermally controlled water heater is permanently installed and connected to the domestic power meter, there will be a reduction of 1d. per kilowatt in the first 10 kilowatt-hours consumed per month.	
Electricity used for cooking, water heating purposes in Kitchens, Restaurants, Cafes, Fish Shops, Clubs and similar premises, will be charged under this tariff.	

## WATER HEATING

### TARIFF "J"

Night or Off-Peak Water Heating Tariff

For electricity consumed by the elements of water heaters which are switched on only between 10 p.m. and 7 a.m. (11 a.m. on Sundays) by means of a time switch, 135d. per kilowatt-hour.

No service charge will be made for meters or time switches installed by the Company in connection with this tariff. (When booster elements are used, they must be connected to the Industrial or Domestic Power Meters, i.e., Tariffs "D" and "E" or "G".)

## ALL PURPOSE INDUSTRIAL TARIFF

A tariff for all industrial consumers who obtain the whole of their electric energy from the Company, and whose annual consumption for all purposes (including lighting) is not less than 250,000 kilowatt-hours. Any consumer supplied under this tariff shall not, at the same time, be supplied at the same premises under any other tariff except Tariff "J" and shall not be entitled to any rebate for unity power factor.

### Tariff

All Purpose Tariff Lighting and Power

Normal Rate.—For all consumption between the hours of 8 a.m. and 10 p.m. and between the usual monthly meter readings —

	Per Kilowatt-hour
Up to and including 1,000 K.W.H. consumed during the period ..	2 14d
For the next 50,000 K.W.H. consumed during the period ..	1 4d
For all in excess of 52,000 K.W.H. consumed during the period ..	1 92d
Low Rate.—For all consumption between the hours of 10 p.m. and 8 a.m. and between the usual monthly meter readings —	
Up to and including 2,000 K.W.H. consumed during the period ..	0.94d
For the next 50,000 K.W.H. consumed during the period ..	0.75d
For all in excess of 52,000 K.W.H. consumed during the period ..	0.60d

The above rate apply to the metropolitan area only. Country rates may be obtained on application.

# HIRING SCHEME FOR ELECTRIC COOKERS, SINK WATER HEATERS AND WASH BOILERS

Under this scheme electric cookers, sink water heaters, wash boiler and bath heaters are supplied to approved consumers on a simple hire system which includes free maintenance.

## "ADELECT" ELECTRIC COOKERS

Electric cookers of two sizes, the "Adelect" No. 1 and the "Adelect" No. 2 are available. They are finished in grey vitreous enamel with white door and nickel fittings.

Each cooker is supplied with a full set of oven utensils, including two sconce trays, grilling and roasting dishes and shelves. The boiling plates are of the radiant type and do not require special utensils.

The "Adelect" No. 1 cooker is suitable for a family of 4 to 5 persons. It is fitted with two boiling plates. The overall dimensions are 40in. high x 26in. wide x 19in. deep. Hire charge, 3/6 per month.

The "Adelect" No. 2 cooker is suitable for a family of 6 to 8 persons. It is fitted with three boiling plates. The overall dimensions are 46in. high x 26in. wide x 21in. deep. Hire charge, 4/7 per month.

## THE "ADELECT" SINK WATER HEATER

This heater is designed for use over kitchen and bath sinks, wash basins, etc. It is thermostatically controlled and designed to supply water at a temperature of 50 deg to 110 deg. F. Overall dimensions, 21in. high x 9in. diameter. Storage capacity, 1½ gallons. Element rating, 400 watts, giving 1½ gallons of hot water per hour. Hire charge, 11d per month.

## THE "ADELECT" WASH BOILER

The capacity of this boiler is 12 gallons. It is fitted with nickel plated drain coat and finished in grey enamel. The elements are controlled by a 3 heat switch attached to the boiler. Element rating, 4,000 watts. Hire charge, 1/20 per month.

## THE "ADELECT" BATH HEATER

The "Adelect" bath heater is of the instantaneous type, single phase 415 V. 8 K.W., and is capable of delivering approximately 1 gallon of water per minute at 140 deg. F. It is automatic in operation by the simple turning on of the hot water tap. Hire charge, 1/6 per month.

A three-phase 415 V. 9 K.W. bath heater of similar construction is available for use in country areas. Hire charge, 2/- per month.

## BUILDING HEATING AND AIR CONDITIONING

Owing to the comparatively mild climatic conditions prevailing in Adelaide, electric heating for building purposes is low both in initial and operating costs. The low vapour pressure which exists throughout the summer months makes evaporative cooling a practical proposition for reducing dry bulb temperatures without increasing the relative humidity above a comfortable level. For this reason and also owing to their lower cost, evaporative coolers are a satisfactory alternative where the cost of a complete air conditioning system embodying a refrigeration plant is not warranted.

The following climatic data is submitted for the guidance of those considering the installation of air conditioning and building heating equipment. The data has been compiled from the records of the South Australian Government Meteorological Department.

TABLE OF MEAN MONTHLY TEMPERATURES AND ATMOSPHERIC VAPOUR PRESSURES FOR THE CITY OF ADELAIDE, SOUTH AUSTRALIA

Month.	Mean Temperature			Extreme Shade Temperature		Extreme* temperature		Pressure inches Mercury
	Mean Maximum Deg. F.	Mean Minimum Deg. F.	Mean Deg. F.	Highest Deg. F.	Lowest Deg. F.	Highest in sun Deg. F.	Lowest on grass Deg. F.	
January .. ..	86.0	61.5	73.7	116.3	45.1	180.0	36.5	0.339
February .. ..	86.1	62.0	74.0	113.6	45.5	170.5	35.8	0.354
March .. ..	80.7	58.8	69.8	108.0	43.9	174.0	32.1	0.345
April .. ..	73.3	54.6	63.9	98.0	39.6	155.0	30.2	0.334
May .. ..	65.7	50.3	58.0	89.5	36.9	142.2	25.6	0.316
June .. ..	60.4	46.7	53.5	78.0	32.5	133.8	22.9	0.297
July .. ..	59.0	44.7	51.8	74.0	32.0	134.5	22.1	0.276
August .. ..	61.9	45.9	53.9	86.0	32.3	140.0	22.8	0.285
September .. ..	66.3	48.0	57.1	90.7	32.7	160.5	25.0	0.297
October .. ..	72.4	51.4	61.9	102.9	36.0	162.0	27.8	0.298
November .. ..	78.6	55.4	67.0	113.5	40.8	166.9	30.5	0.307
December .. ..	83.3	58.9	71.1	114.6	43.0	175.7	32.5	0.320

\*These 5 ft. above ground level. The highest and lowest temperature recorded are instantaneous readings, and for design purposes the maximum shade temperature may be taken as 10 deg. above the highest recorded. For buildings, the temperature between the hours of 8 a.m. and 5 p.m., a minimum temperature of 32 deg. F. may be assumed. The wet bulb temperature is from 30 deg. F. to 50 deg. F. between 3 a.m. and 6 p.m. in 57.5 deg. F.

# CLAUDE FLUORESCENT STANDARD LIGHTING UNITS

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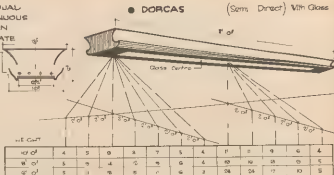
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INSTALLED IN INDIVIDUAL SECTIONS OR CONTINUOUS LINES, LOWER PORTION AVAILABLE AS SEPARATE FIXTURE.

PER OVERALL FEET LENGTH OF FIXTURE

INITIAL LUMENS	WATTS ABSORBED
FOUR TUBES	
878	25
SIX TUBES	
961	42
EIGHT TUBES	
1250	87

ILLUMINATION VALUES TO NEAREST FOOT CANDLE ON A HORIZONTAL PLANE AFTER 100+1000 HOURS OPERATION

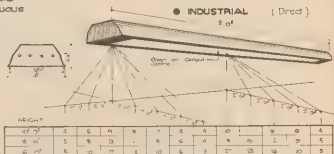


INSTALLED IN INDIVIDUAL SECTIONS OR CONTINUOUS LINES.

PER OVERALL FEET LENGTH OF FIXTURE

INITIAL LUMENS	WATTS ABSORBED
TWO TUBES	
657	6
FOUR TUBES	
878	13
SIX TUBES	
1122	45

ILLUMINATION VALUES TO NEAREST FOOT CANDLE ON A HORIZONTAL PLANE AFTER 100+1000 HOURS OPERATION



PER OVERALL FEET LENGTH OF FIXTURE

INITIAL LUMENS	WATTS ABSORBED
FOUR TUBES	
878	25
SIX TUBES	
961	42
EIGHT TUBES	
1250	87

ILLUMINATION VALUES TABLED ARE FOR FOUR TUBE UNITS. INCREASE BY 50% FOR SIX TUBES AND 80% APPROX FOR EIGHT TUBES. VALUES FOR RANDWICK (4 TUBE) ARE APPROX 15% HIGHER UNDER CENTRE, AND 15% LOWER AT EXTREME POINTS THAN INDICATED FOR DORCAS. FOR OPEN INDUSTRIAL INCREASE VALUES BY 10%.



CLAUDE NEON LTD.

2 ALISON RD., RANDWICK, N.S.W.; PEEL ST., BRISBANE, Q'LAND.; 1 ANAC HIGHWAY, KESWICK, S.A.; CMB, STIRLING HIGHWAY AND BAY RD., CLAREMONT, W.A.; 548 SANDY BAY RD., SANDY BAY, TASMANIA; CLAUDE NEON LIGHTS (VIC.) LTD., 98 DORCAS ST., STK. MELBOURNE, VICTORIA.





## CLAUDE FLUORESCENT INTERIOR LIGHTING

### *Gives Unlimited Design Freedom*

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From the point of view of the designer, probably the most important characteristic of Claude Cold Cathode Fluorescent tube lighting is that Claude installations can be 'tailor made' to conform to any curve or contour of the building. The designer is not restricted to standard lengths and shapes. For building into eaves or troughs with long sweeping lines or acute bends Claude Cold Cathode is ideal. The curve, whether simple or compound, is full-cured on asbestos sheet in the Claude layout-room and the tube bent hot to accurately follow the curve. Any line that can be laid down on paper can be reproduced with Claude Cold Cathode Fluorescent. At the same time a range of standard Cold Cathode lighting units is supplied for all industrial and commercial purposes (see overleaf). Claude Fluorescent is therefore completely adaptable to any lighting requirement whether decorative or purely utilitarian. Development of methods of application is taking place continuously in the Claude Planning and Design Department. The data given overleaf applies to the types of lighting fittings at present supplied. It is to be noted, however, that they are well advanced and will soon be in production.

**COLD CATHODE OPERATION.** The Cold Cathode Fluorescent tube is so named because preheating of the Cathode (small metal cylinder at each end of the tube) is not necessary in order to start the tube. A simple transformer, unaccompanied by any other starting device, applies the over-voltage which initiates a discharge through the argon gas contained within the tube. This discharge rapidly vaporises a minute quantity of mercury, so that the discharge becomes rich in ultra-violet energy which is efficiently converted to light by the fluorescent mineral compound which covers the inside wall of the glass tube. Tubes of larger diameter now in development in

the Claude plant are designed to operate at lower voltages through smaller transformers than hitherto.

**EFFICIENCY.** Approximately 2½ times as much illumination may be expected from fluorescent tubes as is ordinarily produced by filament lamps for a similar, & actually consumption. Thus, where filament lamp installations provide on average 5 to 7 FC per watt per sq ft of area treated, 12 to 15 FC may be expected from fluorescent.

**COLOUR.** The colour of the tube is dependent upon the fluorescent mineral coating. A wide range is available, and thus affords, by way of combination, a great variety of colours, or of white ranging from equality with daylight to equality with any specified tint. Popular white tubes are 'Daylight'—a near daylight white for general purposes, and 'Soft White'—a delicate warm white idea, for soft goods, foodstuffs, catering, cosmetics, etc.

**TECHNICAL SERVICE.** Qualified advisory staff at Claude Neon offices in all capital cities will gladly collaborate with you in designing fluorescent lighting installations.

**THE CLAUDE RENTAL PLAN** of payment practically eliminates initial outlay, leaving additional building-funds free for other purposes. Over the period of the contract (usually 5 years) Claude undertakes all responsibility for maintaining the light output of the installation at a specific predetermined level. In many cases a taxation benefit is derived since costs are charged as operating expense, not capital outlay. Of course, a Claude installation can be purchased outright for cash if desired.

**GUARANTEE.** In the case of cash purchase, Claude Cold Cathode installations are guaranteed for 5,000 hours operation or for twelve months, whichever is reached first.





# LIGHTING FITTINGS

for **MAZDA**

FLUORESCENT  
LAMPS

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Cat. No. L3603

Cat. No. L3603 twin 40-watt ceiling unit, 48 inches by 11 inches, has easily cleaned vertical glass lenses allowing maximum downlight. The luminous glow from the ends with the removable chrome chevron straps adds to the pleasing appearance of this glare-free fitting. A highly efficient luminaire for dining room or low-ceilinged offices and similar applications. Also available in similar designs.

Cat. No. L3607 4-lamp 40-watt, 48 in. x 11 in.

Cat. No. L3606 2-lamp 20-watt, 25 in. x 10 in.



Cat. No. L3518

Cat. No. L3518, 48 inches by 13 inches twin 40-watt arm-indirect fitting. Modern fluted bent glass specially treated for diffusion. Single rod suspension. Wired complete with auxiliaries which are "built-in." Metal work—ivory finish.



Cat. No. L3609  
Registered Design  
Applied For.

Cat. No. L3525, twin 40-watt, 54 inches by 12 inches, semi-direct fitting. Modern fluted specially treated glass panels, wired complete with auxiliaries which are "built-in." Metal work—very finish.



Cat. No. L3324

Cat. No. L3324, Single Lamp 100-watt Industrial Reflector, 60 1/2 inches by 11 1/2 inches. Exterior finish—ivory or grey.

Mazdaux INDUSTRIAL Fluorescent Fittings are available in 2 ft., 4 ft., and 5 ft. lengths for lamps from 20-100 watts. Cat. No. L3324 above is standard 100-watt single lamp industrial fitting. They provide exceptionally high intensities of illumination and freedom from shadow.

Construction is of heavy gauge steel, vitreous enamelled white inside and grey outside, and permits easy assembly in situ on and access for cleaning and maintenance. Alternative outside finish is very. Auxiliaries are fixed and wired to the top housing with the starter switch replaceable from outside the unit, and leads are connected to a ceiling rose with earth terminal on top of housing to simplify installation.

The Built-in Flush Mounting system is recommended when it is desired to recess the lighting reflectors into the ceiling. Glass panels diffuse the light sources. Mazdaux reflectors used for this purpose are of the standard industrial type, with the exception that the starter switches are mounted immediately above or between the lamps, permitting easy access for replacement.

Mazdaux COMMERCIAL Fluorescent Fittings are available in a large range of designs for lamps from 20-100 watts for stores, offices, houses, and commercial applications where appearance is important.

Illustrated are Cat. Nos. L3551, L3516, and L3605, which embody the main features of Mazdaux Commercial Fluorescent Fittings—"built-in" auxiliaries, easy access for cleaning or replacement, sturdy construction and attractive design.

Full details of other Mazdaux Commercial Fittings are available on application to your nearest branch of Australian General Electric Pty. Ltd.

A.G.E. AUXILIARIES lampholders, starter switches, starter sockets and ballasts—are specifically designed to ensure trouble-free operation with Mazda Fluorescent Fittings.

## AUSTRALIAN GENERAL ELECTRIC PTY. LTD.

SYDNEY, NEWCASTLE, LISMORE, MELBOURNE, BRISBANE, ROCKHAMPTON, TOWNSVILLE, ADELAIDE, HOBART  
LALINGSTON. AGENTS IN W.A. ATKINS (W.A.) LIMITED

RAMSAY'S CATALOGUE



## Domestic Lighting Fittings

Australian General Electric supply a complete range of domestic and commercial lighting fittings, including pendants, floor and table standards, enclosed glassware fittings, metal suspension and ceiling flange types.

Commercial ceiling units for corridors, toilet-rooms, halls, etc., indirect lighting floor standards, ceiling fittings and wall brackets are also available.



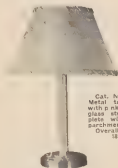
Cat. No. L3507  
Indirect lighting ceiling unit available in aluminium and opal glass, or bronze and opal glass.  
Diameter, 18 in.



Cat. No. L3506  
Single light pendant available in brushed brass or aluminium finish with cream or natural glass. Diameter, 17 in.



Cat. No. O513  
Duplicate indirect lighting ceiling unit available in aluminium and opal glass, or bronze and colour, both with polished edges. Diameter, 20 in.



Cat. No. L3501  
Metal table lamp with pink or amber glass stem. Com. plate with 18 in. parchment shade. Overall height, 18 in.



Cat. No. 100.  
At left—Outside wall bracket available in cream or black finish with amber or opal glass. Available in 2 sizes, 13 in. x 4 in. projection or 18 in. x 3 1/2 in. projection.



Cat. No. 706.  
Outside wall lantern. Black finish; overall height, 18 in. Overall projection, 11 in.

### AUSTRALIAN GENERAL ELECTRIC PTY. LTD.

SYDNEY, NEWCASTLE, LISMORE, MELBOURNE, BRISBANE, ROCKHAMPTON, TOWNSVILLE, ADELAIDE, HOBART, LAUNCESTON. AGENTS IN W.A.: ATKINS (W.A.) LIMITED.

# RING-GRIP 38 5

## ELECTRICAL ACCESSORIES

**Are Always Dependable**

Approved by all Electrical Authorities throughout  
Australia and New Zealand

Every Article is tested and is covered by the  
Makers' Guarantee against faulty workmanship or  
breakdown under normal conditions over a period  
of twelve months.

*Manufactured by:*

**FREDERICK L. COOK & WILLIAMS PTY. LTD.**

**10-68 Mollison Street, Abbotsford, Victoria**

*Agents:*

NEW SOUTH WALES—Boswell & Co., 40 King Street, Sydney

QUEENSLAND—T. H. Martin & Coy., Wilson House, Charlotte Street, Brisbane

SOUTH AUSTRALIA—E. T. Bown, Woranda Building, Grenfell Street, Adelaide

WEST AUSTRALIA—T. W. Egan, 75 King Street, Perth

TASMANIA—H. M. Bamford, Ingle Hall, Macquarie Street, Hobart

NEW ZEALAND—Cory-Wright & Salmon Ltd., 35-37 Panama Street, Wellington



## *Plastic Light Fittings!*

The translucency and high reflective qualities of Duperite Plastics are well suited to the design of modern light fittings which require wide even distribution of light and avoidance of glare.

Duperite Plastics can be produced in an unlimited range of shapes and sizes, and their beauty of colour and texture make possible very pleasing and harmonious effects.

**VENUS**—A boldly designed 3 light fixture suiting a modernistic treatment. Model No. 1644—Champagne with brushed gold. Overall length, 32½ in. Recommended wattage, 60V. per bowl

**MARSHALL**—A neat, compact single bowl fitting giving efficient light distribution. Model No. 1620—Onyx white and chromium.

Model No. 1620 1 Champagne and chromium. Diameter, 15 in. Overall length, 32 in. Recommended wattage, 60V.

**CADET**—Admirably suited to the modern trend of interior decoration. An ideal fitting for Kitchen or Bathroom. Onyx white with contrasting centre band to match room colour scheme. Recommended wattage, 60V. Model No. 2341. Diameter, 10 in.

**VICTOR**—A pleasingly designed single light pendant suitable for office or domestic use. In Onyx white or Champagne. Recommended wattage, 60V. Model No. 1631. Diameter, 14 in.

MOULDED PRODUCTS (AUSTRALASIA), LTD.



CREMORNE ST., RICHMOND, VICTORIA

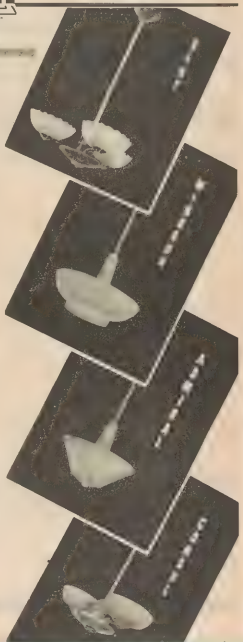
**KENT**—A well-designed two or three light fitting, decorative and efficient. Available in Walnut or Champagne finish. Model No. X1646 3. Champagne finish. Bowl diameter, 8 in. Overall length, 31½ in. Recommended wattage, 60V. per bowl

**WINDSOR**—A charmingly designed and unusually efficient single bowl unit incorporating the Duperite 3 in. louvre. Scaled for domestic or commercial use. Model No 1641—Onyx white, chromium metal parts.

Model No 1642—Champagne with brushed gold. Diameter, 18 in. Overall length, 31 in. approx. Recommended wattage, 60V.

**ADMIRAL**—A compact pendant with bottom louvre or solid transparent base, giving very efficient illumination. For bedroom or playroom lighting. In Onyx white. Diameter, 10 in., 12 in. and 14 in. Recommended wattage, 60V.

**CONSUL**—A pleasing modern unit with a suggestion of classic lines. Available in two- or three-light fittings. Model No. 1609/2, Champagne. Model No. 1609/3, Onyx White. Bowl Diameter, 8 in. Overall Length, 31½ in. Recommended wattage—60V per bowl.



#### QUALIFIED LIGHTING ENGINEER

Information and advice regarding the installation of DUPERITE Plastic Light Fittings will be gladly given by our staff lighting engineer. Apply in the first instance to Moulded Products (Australasia) Limited.

## MOULDED PRODUCTS

(AUSTRALASIA) LTD.

CREMORNE ST., RICHMOND, VICTORIA

#### Interstate Distributors:

##### Sydney

Moulded Products  
(N.S.W.) Pty Ltd.,  
21 Clarence St.  
BX1471

##### Rockhampton and Townsville

Mr. & Mrs.  
H. J. G. G.

##### Brisbane

Moulded Products  
(Qld.) Pty Ltd.,  
Wyman House,  
Charlotte St.  
B.7615

##### Perth

Brown & Dureau,  
37 Murray St.

##### Adelaide

Moulded Products  
(S. Aust.) Ltd.,  
110-112 Pirie St  
Cent. 1620

##### Tasmania

R. H. Little  
54 Brisbane St  
F.A. 10000

MOULDED PRODUCTS (AUSTRALASIA) LTD.



CREMORNE ST., RICHMOND, VICTORIA

# PLASTIC INSULATED WIRES AND CABLES *for Light & Power*

Nylex Plastic Insulation combines high di-electric properties with unique qualities possessed by no other form of insulation

It will not perish, or show any effects of ageing; it is impervious to moisture and does not deteriorate in extremes of heat and cold; is not attacked by tropical fungi, white ants, or any other organic matter. Alcohols and fats do not affect it; it is non-inflammable and does not support combustion.

Where long life is required, or insulating material must be exposed to lubricants, etc., there is no rival to Nylex plastic insulation.

Information regarding the technical properties of Nylex Insulated Wires and complete specifications of available grades will be gladly supplied on application to the manufacturer.



## MOULDED PRODUCTS

(AUSTRALASIA) LIMITED

155 Cremorne Street, Richmond, Victoria

### Distributors:

#### Melbourne:

A.P.I. Cable & Insulation  
Pty. Ltd.,  
571 Bourke St.  
M.U. 9108.

#### Brisbane:

Moulded Products (Qld.)  
Pty. Ltd.,  
Wilson House, Charlotte St.  
B. 7615.

#### Adelaide:

Moulded Products (S. Aust.)  
Ltd.,  
110-112 Pirie St.  
Cent. 1620.

#### Sydney:

Moulded Products (N.S.W.)  
Pty. Ltd.,  
137 Clarence St.  
BX. 1972



★ Nylex is accepted by the State Electricity Commission of Victoria and corresponding authorities, and is produced in standard sizes—in 250 volt power cables (British Standard Specification No. 7) and in lighting, bell, and telephone wiring, suitable for industrial and domestic wiring.



**ELECTRICAL  
APPLIANCES**

*(See also under "Hot Water Systems")*

SECTION

**39**

SECTION

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CATALOGUES 1 and 2

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# Hotpoint

## ELECTRIC RANGES FOR DOMESTIC USE



Model CA2

Outstanding among Hotpoint Electric Range features is the Hi-Speed radiant element . . . the vital part of the Hotpoint range. The Hi-Speed element is the fastest, most reliable cooking unit ever evolved. Practically indestructible, knocks and bumps do not harm it, and spillage does not affect it (it is hinged for easy cleaning). The Hi-Speed element heats by a two-fold method—contact and radiation. The utensil rests directly upon the element itself, and underneath the element is a special reflector which concentrates the heat on to the pot or pan. There is no waste—all the heat goes into the cooking.



Model LM36

Model LB2  
(without plasterack)

### Hotpoint Features

- (1) Hinged Hi-Speed elements.
- (2) Precision heat indicators.
- (3) Reversible 3-heat switches.
- (4) Enamel lined ovens.
- (5) Complete protection of all wiring.
- (6) Readily accessible fuses on all elements.
- (7) Stainless enamel finish.
- (8) Plated steel exterior metal trims.



Model JB1-S

Cat. No.	Hedplate Units	Oven Units	Max Rating	RANGE DIMENSIONS			OVEN DIMENSIONS			Colour
				Height	Width	Depth	Height	Width	Depth	
CA2	1—900w. 2—1900w.	Top 1100w. Bottom 1300w.	5.9KW	49 in.	47 in.	20 in.	12 in.	15 1/2 in.	13 1/2 in.	Mottled Green
CA3	1—1300w. 2—900w.	Top 1750w. Bottom 1300w.	6.9KW	49 in.	47 1/2 in.	20 1/2 in.	12 in.	15 1/2 in.	13 1/2 in.	Mottled Green
LA2	1—1900w. 2—900w.	Top 1500w. Bottom 1300w.	5.6KW	36 in.	26 in.	20 in.	12 in.	15 1/2 in.	13 1/2 in.	Mottled Green
JB1	1—1750w.	Bottom 900w.	2.95KW	18 1/2 in.	22 in.	15 in.	11 in.	12 in.	11 in.	Mottled Green
JB1S	1—1750w.	Bottom 900w.	2.95KW	38 1/2 in.	22 in.	15 in.	11 in.	12 in.	11 in.	Mottled Green
CM3	1—1900w. 2—900w.	Top 1700w. Bottom 1500w.	6.9KW	36 in.	28 in.	24 1/2 in.	15 1/2 in.	15 1/2 in.	17 1/2 in.	Cream
LM3	1—1900w. 2—900w.	Top 1700w. Bottom 1500w.	6.9KW	34 1/2 in.	21 in.	24 1/2 in.	11 1/2 in.	14 1/2 in.	17 1/2 in.	Cream
LM36	1—600w. 1—1200w. 1—1800w. or 1800w.	Top 2250w. Bottom 1500w.	7.3KW	38 1/2 in.	22 1/2 in.	26 in.	15 in.	16 in.	19 1/2 in.	Cream

Optional Ratings and Types of Hotplate Units are available.

**AUSTRALIAN GENERAL ELECTRIC PTY. LTD.**  
SYDNEY NEWCASTLE. LISMORE. MELBOURNE. BRISBANE. ROCKHAMPTON. TOWNSVILLE. ADELAIDE. HOBART.  
LAUNCESTON. AGENTS IN W.A.: ATKINS (W.A.) LIMITED.



# Hotpoint

## COMMERCIAL COOKING EQUIPMENT

**39**

### HOTPOINT HEAVY DUTY RANGES

Heavy duty commercial type ranges are produced by Hotpoint in styles to suit the requirements of every large kitchen—Hotel, Cafe, Restaurant, Club, Guest-house, Hospital, Sanatorium or Sheep Station; and the secret of their versatility is that three basic components are custom built into any reasonable assembly suitable for the installation.

The three basic components are—

- (1) The Cat. 3500 6KW 210V reacting oven having internal dimensions 18 1/2 in. high x 17 1/2 in. wide by 26 in. deep, giving capacity to handle up to 50 meals per sitting.
- (2) The Cat. 6055 3.5KW 240V rapid heating radiant hotplate dimensions 14 in. x 9 in., with its famous incandescent sheathed Calrod element, giving more robust speedy service than any similar type of unit.
- (3) The Cat. 5886 2KW 12 in. x 9 in. Cast Hotplate for simmering duty, and general stock cooking.

All elements have three heat switch controls, indicating pilot lights, and elements and fittings are readily accessible for all purposes. Standard finish is either cream or industrial grey.



Cat. 3500 30KW Hotpoint Range with 4 radiant and 2 oast hotplates.

Cat.	Type	Oven Location	Overall Floor Space	Hotplate Area	Hgt.	Overall Hgt.	Leg Hgt.	Hotplate Arrangement	Total Rating
3500	Roast Oven	Single Elevated	29 1/2 x 30	Nil	Nil	50	24	N-1	9KW
3503	Range	Single Elevated	63 1/2 x 30	38 x 30	30	45	19	2R 2C	17KW
3504C	Range	Single Elevated	63 1/2 x 30	38 x 30	30	45	19	4C	14KW
3505R	Range	Single Elevated	63 1/2 x 30	38 x 32 1/2	30	45	18	4R	30KW
3209	Range	Single Elevated	63 1/2 x 30	40 x 30	26	36	—	2R 2C	17KW
3294C	Range	Single Low	40 x 30	40 x 30	30	30	—	4C	30KW
3208R	Range	Single Low	40 x 30	40 x 30	26	36	—	4R	20KW
3208	Range	Double Low	67 1/2 x 30	67 1/2 x 30	36	36	—	2R 2C	30KW
3209	Range	Double Low	67 1/2 x 30	67 1/2 x 30	36	36	—	4R	27KW
3221R	Hotplate Table	N-1	12 x 36	52 1/2 x 30	10	34	18	6C	27KW
3221R	Hotplate Table	N-1	16 x 36	66 1/2 x 30	10	39	18	24C	27KW
3222C	Hotplate Table	N-1	16 x 36	36 x 10 1/2	36	36	15	4C	9KW
3222R	Hotplate Table	N-1	40 x 30	40 x 10 1/2	36	36	18	4R	15KW

### HOTPOINT DEEP WELL FISH FRYERS

Three main sizes of A.G.E. Edison Hotpoint Fryers are made—

THE KITCHEN DEEP FAT FRYER supplied in one, two and three pan sizes.

**AUTOMATIC ADJUSTABLE TEMPERATURE CONTROL**—Just set the dial for any degree of heat and forget it.

**"CALROD" HEATING UNIT**—The exclusive and practically indestructible Calrod immersion unit projects through the front at a height above the bottom, permitting sediment from food to drop into a zone of cooler fat at the bottom of the container. The unit is protected by a strong removable screen which also acts as a support for the cooking basket.

**RUGGED CONSTRUCTION**—The body of the kitchen type fryer is of heavy gauge steel and the construction generally is unusually strong. The one-piece top is sloped to ensure clean working surface and maximum cooking economy.

Weights are respectively 21 in., 42 in., and 82 in., with depth of 29 in. Working surface height is 36 in. overall height 49 in., including splashback.

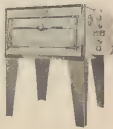
### HOTPOINT BAKE OVENS

A full range of Hotpoint Bake Ovens are manufactured to suit all requirements, from the smallest of afternoon tea rooms to the largest hotel and hospital installations. Four standard sizes of ovens are presented, viz. one tray, two tray, four tray, and sixteen tray ovens, and these are each standard and patterned so that multiple installation may be built up as required in fashion as required.

All ovens feature three heat switch control to all elements, pilot and cooling lamps, controllable flue vent for discharge of cooking vapours when desired, automatic thermostat temperature control.

Ovens are normally supplied with terra cotta tiled hearth, whilst special provision may be made with steel decks for roasting duty.

A.G.E. also supplies Urns, Compartment Urns, Pie-Heaters, Coffee Percolators, Toasters-Grillers, Water Column Electric Radiators, Industrial Heating Elements of all types, Industrial Temperature Controls, Steam Generators.



### BAKE OVEN DIMENSIONS

Cat. No.	Dimensions	Deck Area, sq. ft.	Trays	Rating	Phases	Height of door opening	Overall Dimensions in inches At 1st. Depth	Deck Height excluding Ht. at 1st. 30" (max)
R.103	17" x 30"	5 1/4	1	3.0 K.W.	1	12"	27 1/2 33	28
R.107	23" x 30"	7 1/4	2	6.0 K.W.	2	19"	30 1/2 39	35 1/2
R.114	33" x 60"	16 1/2	4	24.0 K.W.	3	19"	70 1/2 88	88
A.B. 162	63" x 114"	52	16	34.0 K.W.	3	19"	135 135	135

The ovens take standard trays 16 in. x 26 in. Standard legs are 30 in., while 8 in. legs are used in "Ad-a-Deck" assemblies.

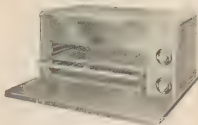
## AUSTRALIAN GENERAL ELECTRIC PTY. LTD.

SYDNEY NEWCASTLE, LISMORE, MELBOURNE, BRISBANE, ROCKHAMPTON, TOWNSVILLE, ADELAIDE, HOBART, LAUNCESTON AGENTS IN W.A.: ATKINS (W.A.) LIMITED

ELECTRICAL EQUIPMENT



*. . . leaders in the field  
of Commercial Cooking Equipment*



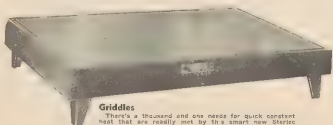
#### Grillers

Carefully planned for heavy-duty commercial service the Sterlec Grillers are ideal for toasting work in cafes, hamburger shops and restaurants. Available in two sizes and finished in stainless steel and baked enamel with nickel-plated steel apron, they are easy to use and easy to clean.



#### Heavy-duty Bake Ovens

A small brother to the efficient multiple deck oven on the opposite page the single deck model by Sterlec is already the smooth-working basis of many successful baking businesses.



#### Griddles

There's a thousand and one needs for quick constant heat that are readily met by the smart new Sterlec griddle. Designed for economy of operation and of really rugged construction, they produce grills and quick meals with admirable swiftness and ease.



#### Sterlec Deep Fish Fryer (above)

Designed on ultra-modern lines and finished in enamel and gleaming stainless steel, the Sterlec Deep Fish Fryer requires a minimum of attention. There are no corners for dirt to accumulate and the steel front panel makes cleaning easy. The controls are mounted below the pan and away from spillage and damage. The heating units are easily replaced if necessary. Single or multi units are supplied as desired.

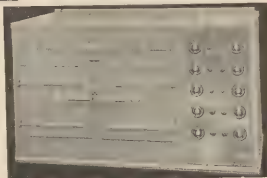
#### Heavy Duty Ranges (right)

Fit for the Waldorf yet at home in hospitals, hotels, industrial canteens, cafes, or restaurants, the Sterlec Heavy Duty Ranges make cooking an experience of technical and electrical ingenuity. With 2000 W. 8 in. x 10 in. hotplates and of welded steel construction, these ranges make cooking par excellence a simple matter.



**Heavy Duty  
Bake Ovens**

Equipment of unrivalled efficiency, the Sterlec Heavy Duty Bake Oven is the ideal of any pastrycook. Made in single or multiple deck types and incorporating steel fittings throughout, they are supplied to all bakeries where reliability of performance and superiority of technical construction are all important.



### STERLING ELECTRIC MANUFACTURING PTY. LTD.

ST. MARYS, N.S.W.

Manufacturers of HEAVY DUTY RANGES, ROASTING OVENS, BOILING TABLES, BAKE OVENS, STRIP HEATERS, CONVECTION HEATERS, INDUSTRIAL GLUE POTS, WATER HEATING UNITS, GRIDDLES, Etc.

Distributors

GERARD & GOODMAN LTD.  
Adelaide and Whyalla.  
CARLYLE & CO., Perth and  
Kalgoorlie.

NOYES BROS. (SYD.) LTD.  
Sydney, Newcastle, Brisbane.

A. H. GIBSON (Electrical)  
CO. PTY. LTD., Melbourne  
V. McDONALD GRANGE,  
Hobart.

**YOU CAN BANK ON STERLING QUALITY**

BRAMBLEY'S CATALOGUE



**TELEPHONES**  
and  
**BROADCAST**  
**SYSTEMS**

SECTION

**40**

SECTION

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CATALOGUES 1 to 5

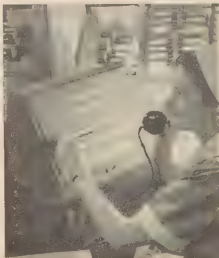
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## SOUND AMPLIFYING EQUIPMENT

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A.W.A. Sound Equipment as used in hospitals — nurse using calling system



A.W.A. Sound Equipment for service station calling system



A.W.A. Sound Equipment used for guest paging system in clubs, hotels, etc.



A.W.A. Centralized Radio and record playing system for use in hotels, factories, schools, etc.

BRUNNEN CATALOGUE





#### A.W.A. Amplifier Type IG8241: 12/15 Watt

Designed to operate from 240V or 110V, 50 cycle A.C. or from 2/6V Accumulators, and is a compact unit of high quality performance. The answer for moderate powered installations requiring change-over facilities and for portable and mobile use. Styled in grey wrinkle finish. Specifications: Frequency Response—30-10,000 cycles flat within  $\pm 2$  db

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1

#### Typical A.W.A. public address permanent installation equipment

Housed in metal rack assembly including high grade radio, record turntable and pickup, microphone input, distribution amplifiers and comprehensive controls for use in schools, factories, hotels, entertainment halls and similar installation.



#### A.W.A. Record Player

For use with public address equipment or radio receivers—compact and portable unit in attractive polished timber case. Available with electric or spring motor as required

#### Microphones

Dynamic and crystal types for all purposes—with fixed or adjustable table or floor stands—with press-to-talk or toggle switch as required.



## PUBLIC ADDRESS EQUIPMENT

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED  
47 YORK STREET, SYDNEY - 167 QUEEN STREET, MELBOURNE

# SIEMENS (AUSTRALIA) PTY. LIMITED

SYDNEY—131 York Street

MELBOURNE—289 William Street

BRISBANE—132 Charlotte Street

ADELAIDE—85 Grenfell Street

HOBART—Medhurst & Sons, 95 Collins Street

NEWCASTLE, N.S.W.—F. H. Pearson, 45 Watt Street

PERTH—H. C. Little & Co., 402 Murray Street

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2

Manufacturers of Telephone Apparatus of all descriptions, Lamps, C.M.A. Wires and Cables, Measuring Instruments, Heat Economy Control Apparatus, Lighting Reflectors, Power Plants, etc.  
Contractors to Administrations throughout the world.

## "NEOPHONE"

### PRESS BUTTON TELEPHONE SYSTEMS

FOR OFFICES, FACTORIES, HOSPITALS HOTELS, SERVICE FLATS, Etc



Fig. 1 Desk Type Intercommunication Telephone for typical 11-line installation equipped with multiple line cord and rosette.



Fig. 2 Wall Type Telephone

Intercommunication Telephones of the type shown above are suitable for a comprehensive system requiring full intercommunication between each point. The illustrations show telephones suitable for an 11 line installation, but other sizes are obtainable suitable for 6-line, 16-line and 21-line installations. An installation of these telephones operates from one central battery which may consist of from four to six dry cells according to the number of telephones and the overall length of the cable runs. As a general rule, four cells are sufficient where the total cable used does not exceed 250 yards.

The Telephones are fitted with the Siemens patented High efficiency "Neophone" Handset, which comprises a moulded bakelite case, a replaceable immersed electrode inset transmitter and a replaceable receiver inset. Handsets of this type have been

standardised by the Australian Post Office, the British Post Office, etc., mainly because of the speaking efficiency and superior articulation which their use affords.

A highly-finished black enamelled pressed steel case with gold lines encloses combined ringing and selecting switches of the press button type with automatic resetting equipment. All contacts are specially enclosed as a protection against the entry of dust.

For installation purposes, the Wall Telephone is mounted on a base-board and the connecting wires are run directly into the back of the instrument. The Table Telephone is equipped with a multiple cord which terminates on a well-finished circular junction box to which the line wires are connected.

## PRIVATE AUTOMATIC TELEPHONE EXCHANGES (P.A.X.)

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1.—The object of a private telephone system is to provide a means of communication that will satisfactorily provide the *greater efficiency* of the system in accordance with the *increasing* requirements demanded of such a system are reliability and speed of operation, and in these two essentials the supremacy of the private automatic exchange is unchallenged. An important feature also is the ease with which Branches in city or suburbs can be connected, by means of extension lines from the P.A.X., with Head Office or Factory.

## 2.—Capacities of P.A.X. Equipments

Automatic Equipment No.	Maximum Number of Lines	Maximum Number of Connecting Circuits
36	10	2
40	25	4
45	50	6
21	100*	10

\*Information relating to Automatic Switchboards of larger capacity will be furnished on request.

## 3.—Dimensions and Weights of P.A.X. Equipments

Automatic Equipment No.	Height	Width	Depth	Weight
36	1' 6 1/2"	1' 2"	8 1/2"	76 lbs.
40	2' 2 1/2"	1' 8"	11 1/2"	180 lbs.
45	5' 5 1/2"	1' 7"	1' 3 1/2"	400 lbs.
21	5' 5 1/2"	2' 8"	1' 10 1/2"	860 lbs.

## 4.—Transrectors (see paragraph 13)

For use with Automatic Equipment No.	Height	Width	Depth	Weight
36	10 1/2"	1' 2"	8 1/2"	42 lbs.
40	10 1/2"	1' 8"	11 1/2"	82 lbs.
45	1'	1' 7"	1' 3 1/2"	100 lbs.
21	1'	1' 7"	1' 3 1/2"	100 lbs.

## 5.—Reliability

All apparatus is of standard type, of proven reliability, as used in large automatic exchanges supplied to the British Post Office and large overseas Telephone Administrations.

To ensure the utmost reliability, all relays are fitted with twin contacts.

## 6.—Simplicity and Speed of Operation

Connections are established by means of a Siemens dial that is simple to use and is already familiar to most people, since it has been standardised by the Australian Post Office for use on all public automatic exchanges.

Connections are completed in a few seconds and are cleared immediately the receivers are replaced.

## 7.—Secrecy

Conversations are absolutely secret and are guarded against interruption except in special cases, e.g., the right-of-way facility.

## 8.—Compactness

These P.A.X.'s require less space than any other equipments of similar capacities on the market.

## 9.—Low Installation Costs

Only one pair of wires is required from the exchange to each telephone. Screw line terminals are provided on the exchanges, thus eliminating the necessity for soldered connections.

## 10.—Ease of Extension

The initial equipment is readily extensible to meet the requirements of an expanding organisation.

## 11.—Low Maintenance Costs

Robust and reliable apparatus reduce the attention required to a minimum.

## 12.—Economy

Low installation and maintenance costs, coupled with the fact that no operator is required, make these equipments unsurpassed for economy.

## 13.—Power Supply

In view of the fact that the use of accumulators as a current source is attended by difficulties in respect of maintenance, etc., a patented transrector has been designed which enables these equipments to be operated direct from A.C. supply mains. These transrectors, having no moving parts, and being without valves, require no attention whatever in service.

Should it be desired to ensure continuity of the telephone services in the event of a failure of the power supply, then a single battery is fitted, charged by means of an automatic charging transrector.

## 14.—Telephones

A special feature of these equipments is the use of high-efficiency Neophones as standardised by the Post Office for public service. These instruments can be supplied for desk or wall mounting as shown at the left. In construction, materials and finish they are insensitive to changes in temperature and humidity. The incorporation of a patented anti-side tone circuit enables conversations to be carried on with surprising ease in noisy situations such as machine shops, engine rooms, and the like.



NECOPHONE TABLE PATTERN



NECOPHONE WALL PATTERN

## PRIVATE AUTOMATIC TELEPHONE EXCHANGES

(continued)

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**15.—Auxiliary Facilities**

In addition to the normal connecting facilities the following auxiliary services can be provided, if desired.—

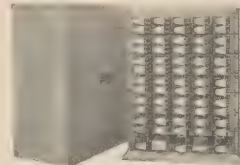
P.A.X. Nos. 21, 40 and 45	Executive Right-of-way Conference Facility Code Call Fire Alarm Secretary Service.
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**16.—Executive Right-of-way**

Executives who desire to be able to enter conversations that are already in progress are provided with a press-button alongside their telephones. If the called line is engaged, the caller hears the busy tone, but on pressing the button the tone is cut off and the executive can speak to the wanted party. When connection is made in this way, those already conversing are warned by the momentary application of the busy tone that a third party has entered the conversation.

**17.—Conference**

Certain lines may be provided with the conference facility. A number is allocated to the conference circuit, and all parties to a pre-arranged conference call this number in the normal manner. As each connector reaches the conference number, the calling line is switched directly to the conference circuit, and the connector is released and becomes available for other calls. Thus a conference can be held without reducing the number of connecting circuits available for other calls. Any party to the conference may retire at will without in any way affecting the other connections; he can then make other calls and re-enter the conference simply by dialling the conference number.

**18.—Code Call**

This facility enables a person to be called by means of code signals on lamps, bells or similar devices. When this facility is provided, a certain line is reserved for this purpose, and executives

codes can be rung by dialling an extra digit corresponding to the person required.

**19.—Fire Alarm**

This facility is provided by appropriating a number in the same manner as for the Code Call facility. When this number is dialled, special warning devices come into operation.

**20.—Secretary Service**

The instruments of an executive and his secretary can be inter-wired in such a way as to enable the secretary to filter incoming calls.



(Above) —  
No. 40 Type  
P.A.X. 25 Lines  
(Wall mounted)

(At Left) —  
No. 36 Type  
P.A.X. 10 Lines  
(Wall mounted)

(At Right) —  
No. 45 Type  
P.A.X. 50 Lines  
(With cover removed)



# Standard Telephones and Cables Pty. Limited

252-274 Botany Road, Alexandria, SYDNEY, N.S.W. — 71 Magellan Street, LISMORE, N.S.W.

588 Bourke Street, MELBOURNE, VICTORIA

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3

## Interstate Distributors for Telephone Equipment:

QUEENSLAND.—Brisbane Electrical Company, R. H. Tonks, 47 Elizabeth Street, BRISBANE

SOUTH AUSTRALIA.—Unbehaun & Johnstone Ltd., 58 Gawler Place, ADELAIDE, S.A.

WEST AUSTRALIA.—M. J. Bateman Ltd., 12 Milligan Street, PERTH, W.A.

TASMANIA.—W. & G. Genders Pty. Ltd., 53 Cameron Street, LAUNCESTON, TAS.

Also at HOBART, BURNIE and DEVONPORT.

## PRODUCTS

Inter-office Telephones, Private Automatic Telephone Exchange Systems, Public Address and Sound Amplifying Systems, and All Classes of Telephone and Radio Communication equipment

### INTER-OFFICE TELEPHONE SYSTEMS

#### TWO STATION PRIVATE LINE.

For use when only two stations are required. Two wires and battery of 2 dry cells to each station.

Instrument of Black Moulded Bakelite.



S.T.C. 2 Station  
Private Line  
Telephone.



S.T.C. 13-Station  
Inter-Office Telephone.

#### 13 STATION INTER-OFFICE TELEPHONE

Enables all stations to call each other on selective ringing, selective talking basis. As many conversations may be conducted simultaneously as there are pairs of instruments. May also be used as a conference system, with several telephones participating in the same conversation.

#### 2, 3 or 4 STATIONS COMMON TALKING SYSTEM.

Provides communication between two to five stations, each of Black Moulded Bakelite as illustrated.

common-talking system. A Common Battery of 4 Dry Cells is sufficient for installation up to 500 yards, and one extra dry cell for each additional 250 yards. Instrument Black Moulded Bakelite as illustrated



S.T.C. 4 Station  
Inter-Office Telephone.

#### P-A-X AUTOMATIC TELEPHONE SYSTEMS—

These systems are primarily intended for large installations that are beyond the capacity of push button systems. All our automatic systems use standard 2-wire dial telephones. Individual dialling tone, ring back tone and busy tone are supplied.

#### NUMBER OF LINES.

Any number of lines can be catered for, from 22 upwards. Standard sized switchboards are capable of operating 22, 50, or 100 lines, and provide complete secrecy on all calls.

—RINGSIDE CATALOGUE

# Standard Telephones and Cables Pty. Limited

## SOUND REINFORCEMENT EQUIPMENT

S.T.C. has had 50 years' experience in the design and manufacture of sound reproduction equipment. This experience is evident in the high tonal fidelity of all S.T.C. amplifying systems.

Power amplifiers can be supplied in sizes ranging from 5 to 100 watts output, to suit a wide range of varying conditions—schools, paging systems, "music while you work," outdoor meetings, sporting events, etc.

Liberal safety factors are incorporated throughout to ensure reliability in operation. A variety of microphones, suitable for any type of service, can be supplied. Loudspeakers may be the dynamic cone type (on baffles, in cabinets, or metal flares) or high power exponential horns for outdoor use.

S.T.C.'s Sound Engineers will be pleased to give advice and submit quotations for any installation where high fidelity sound reproduction is required.



## PUBLIC ADDRESS SYSTEMS

S.T.C. pioneered public address systems in Australia 25 years ago.

Illustrated at left is an S.T.C. Standard Control Cabinet, which combines an amplifier and monitor speaker with a radio receiver, gramophone motor and pick-up unit.

Microphone, loudspeakers and the amplifier unit may be varied to suit any requirements.

Equipment of this type is widely used in factories, schools, hospitals, stores, etc. It permits the use of either radio, gramophone, or microphone input as desired, with any number of speakers. Paging automatically interrupts the musical programme and restores it immediately the announcement is completed. The microphone may be situated either at the control cabinet or elsewhere as desired.

Starting and finishing time signals in Factories may be simultaneously heard throughout the premises by the use of a built-in oscillator system connected with a suitable clock. A distinctive signal is transmitted automatically over all desired speakers at predetermined times.

Each extension speaker may be controlled individually from the cabinet.

The volume being applied at the extension speakers is indicated by an output meter on the control panel.

The rugged welded steel cabinet is 6 ft. high, 1 ft. 10 in. wide and 1 ft. 3 in. deep. It is attractively finished in durable grey brocade lacquer.





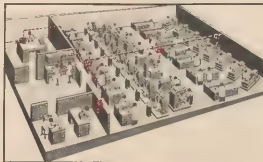
# STEANE'S SOUND SYSTEMS

for

PUBLIC ADDRESS, MUSIC REPRODUCTION, & PROGRAMME DISTRIBUTION

## PRODUCTS

Microphones;  
Microphone Stands,  
Speaker Units;  
Microphone Line  
Transformers;  
Speaker Baffles and  
Boxes,  
Speaker Flares and  
Horns;  
Amplifiers, all sizes,  
5 to 1000 watt-  
Unit, Console or  
Rack Mounted  
Equipment.



1. Executive's Microphone.
2. Receptionist's or Telephone's Microphone.
3. Office Loudspeaker.

4. Factory Loudspeakers.
5. Factory Loudspeakers.
6. Factory Loudspeakers.

## SYSTEMS

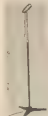
Public Halls and  
Auditoriums;  
Church Hearing  
Aids;  
Factory Paging  
Systems;  
Hotel Call Systems.  
School, Paging and  
Broadcasting  
Systems;  
Hospital Broadcast-  
ing Systems;  
Inter-Office Talk  
Back Systems.

## ROLL CALL OF APPLICATIONS

Advertising Trucks and Public Address; Airport Paging; Alarm Systems;  
Auction Rooms; Auditoriums, Band Stands; Cabarets; Churches; Court  
Rooms; Dance Halls, Exhibitions; Factories; Hospitals; Hotels; Lodges;  
Markets; Offices; Orchestras; Playgrounds; Schools (classrooms, assembly  
yards); Ships; Skating Rinks; Sports Clubs and Fields; Stadiums; Ship  
Piers; Stores; Swimming Pools; Theatres; Transport Terminals.

## EQUIPMENT

### MICROPHONES



"TORPEDO"



"DYNASTAND"



"DYNACARD"



RADIO TUNER  
PRE-AMPLIFIER

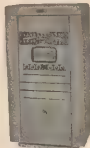
"TORPEDO" microphones are ideal for the reproduction of speech and music. They possess true "high fidelity" response and give duo-directional pick-up. Attractive chrome finish with thread to fit adjustable "Tri-stand" as illustrated.

"DYNASTAND" microphones are renowned for clear, crisp speech and general public address work. This is the ideal desk unit for paging systems and is complete with "press to talk switch". This switch cuts out the music and allows speech to be fed over the sound system. Finished in brown wrinkle with foretine bronze cage.

"DYNACARD" microphones provide the ultimate in quality reproduction of speech and music. The high gain obtained with this unit enables the user to stand back from the microphone, thus assuring a full view of the performer's face. Finished in chrome die-cast case.

AMPLIFIERS of all sizes are manufactured in Desk Units, Console Cabinets or Rack-mounted to suit particular applications. Stock Units are provided with "Radio," "Pick-up" and "Microphone" inputs, and are operated from the A.C. mains. Only the best components and materials are used throughout, thus ensuring long life and dependable service. Full rated output guaranteed with excellent tone and minimum distortion. Finished in Grey Wrinkle, other colours available to order.

### AMPLIFIERS



CONSOLE CABINET  
FOR SCHOOL OR  
FACTORY USE





## DIAGRAMMATIC LAYOUT OF TYPICAL SOUND SYSTEM INSTALLATIONS



FOR PUBLIC HALLS AND AUDITORIUMS



FOR CHURCHES



FOR OFFICES, FACTORIES, STORES, HOTELS, etc.



FOR SCHOOLS



FOR INSTITUTIONS, HOSPITALS, etc.

## "SOUND" ADVICE FOR ARCHITECTS

The use of "Sound" equipment in every phase of public life and industry during the last 15 years has made it essential for modern buildings to be constructed to facilitate the easy installation of Speakers, Wiring, and Equipment. Architects are invited to consult our technical engineers on all phases of installation work with a view to planning the ideal installation for a particular application.

Our engineers have carried out over 1500 installations in Australia and their experience is yours to command. All our equipment has been designed for high fidelity and may be relied upon for its quality and dependability. Installations carried out by us bear a guarantee of "complete satisfaction or removal without obligation to the customer." This guarantee ensures the quality of the equipment offered, which in consequence must give full satisfaction and value to the purchaser.



# REFRIGERATION

SECTION

# 41

SECTION

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CATALOGUES 1 and 2

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# R. WERNER & Co. Pty. Ltd.

Showrooms:  
602 LITTLE COLLING STREET,  
MELBOURNE  
Telephone M.J. 5461

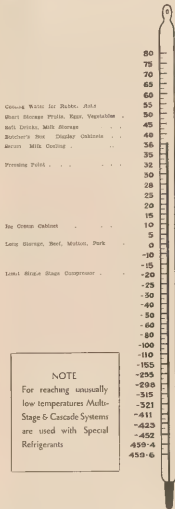
## REFRIGERATION ENGINEERS

Factory  
54 85 BURNLEY STREET,  
MELBOURNE, VICTORIA  
Telephone JA 1181

### THERMAL INDICATOR FOR REFRIGERATION

41

1



Some idea of the range of temperature covered by present day refrigeration can be clearly seen from the "Thermal Indicator" illustrated on this page. Not only does this range run the full gamut of the thermometer, but it also covers a tremendous number of applications practically all of which are of distinct interest to Architects and Consulting Engineers.

#### AIR CONDITIONING

In the case of air conditioning, the safety factor must be given very high consideration. It should be noted that many refrigerants universally used for commercial applications are unavailable.

Since most systems are installed in existing buildings, layout of the building must be taken into account when planning which type of system should be used. (See page 42) These systems are divided into the following types:

#### Direct Expansion:

- (a) Central compressor unit, using coils with direct expansion for distribution of conditioned air.
- (b) Packaged units which are self-contained, a number of which are so located to give correct air distribution.
- (c) A central unit or units using a number of packaged coil and blower units operating from one or more compressors.

#### Central System:

With this system a central unit cools water or brine to required temperatures which is then circulated through a number of blower cooling units to provide even distribution of cooling units to provide even distribution of cooling.

#### GENERAL

Coming down the range to the storage of foodstuffs, again each application has its own problems. For fast cooling the special draft type of evaporator is ideal. This applies to bananas, ripening—short term storage of meats and other foodstuffs. On the other hand, other types of produce may be handled by quickly circulating air, and the normal method of cooling is by steel pipe coils widely distributed on the walls or ceiling. In some cases, a secondary fan is used for even, gentle movement of the air. Cooling of liquids is also generally provided by means of submerged coils, either steel or copper with, in many cases, a secondary fan for faster heat absorption. Low temperature storage of fat and other produce is generally provided by steel coils, often formed into shelves on which the goods are stored.

In all these applications from summer air conditioning to quick freezing, the following cardinal points must be watched to ensure satisfactory installation:

1. Correct calculation of the heat load taking into account heat leakage, product load and usage, and miscellaneous factors.
2. Correct selection of a compressor to take care of the peak load under several conditions.
3. Correct choice of the type of evaporator—draft, sub-cooled, or flooded—in give the best conditions of temperature and humidity for the produce to be stored, correct balance between the condensing unit or units and the cooling coils or coils.

As each installation has its own particular problem, the advice of Werner experts is always available. Werner's experts will gladly discuss your problem. Remember, after 25 years of experience in this industry, we are available to you.

R. WERNER & CO. PTY. LTD.  
Manufacturers of Refrigeration since 1900

° FAH.

# WERNER REFRIGERATION

41

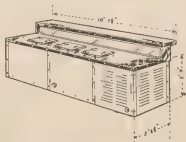
The Werner range offers a complete line of Refrigeration Equipment designed to meet every need. R. Werner & Company have been manufacturers of Refrigeration only since 1900. Their long experience is at your service when planning instal-

lations of cooling equipment for Air Conditioning—Display and Storage Cabinets, Water Drinking Fountains—Cooling Units for Milk, Bottled Beverages, Foodstuffs, Cool Rooms, etc.

## DISPLAY CABINETS (Metal)

Model	Internal Capacity	No. Doors	Overall Dimensions		
			Length	Height	Depth
Curved or Straight Glass	Approx. 95 c.ft.	2	48"	46"	29"
	Approx. 37 c.ft.	3	72"	46"	29"
	Approx. 60 c.ft.	4	96"	46"	29"

All Werner display cabinets are designed to add beauty and distinction to every layout. Foodstuffs and goods are attractively displayed to distinct advantage. These cabinets provide ideal storage facilities for perishable stocks.



## STORAGE CABINETS (Polished Oak, Maple or Ducoed Metal)

Model	Internal Capacity	No. Doors	Overall Dimensions		
			Length	Height	Depth
16MB/1/C	15 c.ft.	2	62 1/2"	41 1/2"	24 1/2"
30WZ/P/R	30 c.ft.	6	64 1/2"	59 1/2"	23"
76MS/O.R.	75 c.ft.	6	75"	96 1/2"	30"

## AIR CONDITIONING

Be sure to consult expert refrigeration engineers when planning air conditioning for any type of structure. Werner's will gladly supply all the information you require about Air Conditioning equipment.



## COOLING EQUIPMENT FOR DAIRIES, etc.

Qts. Per Day	Room Size by 8' x 6' High	Size of Brine Tank	Galls. of Brine	Unit
200	5' 0" x 5' 0"	1' 0" x 1' 6" x 5' 0" high	170	A752
500	7' 0" x 7' 0"	6' 6" x 2' 0" x 5' 0" high	365	A2002
800	9' 6" x 8' 0"	8' 6" x 2' 0" x 5' 0" high	480	W3002

Consult Werner's about Refrigeration Equipment for Bakeries, Dairies, Cafes, Canteens, Hotels, Hospitals, Delicatessens, Cool Stores, Clubs, Morticians, Ice Plants, etc.



ASK FOR WERNER'S EXPERT ADVICE

RESEARCH & DEVELOPMENT

# Standard Telephones and Cables Pty. Limited

**41** 252-274 Botany Road, Alexandria, SYDNEY, N.S.W. — 71 Magellan Street, LISMORE, N.S.W.

**2**

588 Bourke Street, MELBOURNE, VICTORIA

## *Interstate Distributors:*

QUEENSLAND.—Edgar V. Hudson Pty. Ltd., 316 Adelaide Street, BRISBANE, QLD.  
SOUTH AUSTRALIA.—Unbehaun & Johnstone Ltd., 58 Gawler Place, ADELAIDE, S.A.  
WEST AUSTRALIA.—M. J. Bateman Ltd., 12 Milligan Street, PERTH, W.A.  
TASMANIA.—W. & G. Genders Pty. Ltd., 58 Cameron Street, LAUNCESTON, TAS.  
Also at HOBART, BURNIE and DEVONPORT

## FREEZ'R SHELF REFRIGERATORS



S.T.C. patented Freez'r Shelf construction gives more food storage space in relation to the overall size of the refrigerator than is possible with any other type of refrigerator.

The Freez'r Shelf also gives these important advantages:

- Perfect 3-Zone Food Storage. Separate Freezing, Normal, and Moist Zones provide ideal storage conditions for every kind of food, from frozen desserts to fresh, leafy vegetables.
- Easily handled, space saving Defrostajar in place of the old fashioned drip pan.
- More ice cubes and frozen desserts quickly and cheaply.
- The most convenient shelf arrangement ever offered.
- Silent, sealed mechanism—freezes quickly yet uses less current.
- Cold-boarding cabinet with triple sealed mechanism 25% thicker than usual.

### SPECIFICATIONS

Storage capacity 4.7 cubic feet  
Height—4 ft. 4½ in.  
Width—2 ft. 1½ in.  
Depth 2 ft.

LIFTS

SECTION

42

SECTION

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CATALOGUES 1 to 6

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# HYDRAULIC POWER, ELECTRIC and HYDRAULIC LIFTS LTD.

182-204 DOWLING STREET, WATERLOO

TELEPHONE. MX 2208

42

## Lift Contractors, Hydraulic and General Engineers

Commonwealth Representatives of the Express Lift Coy. Ltd., London.

Represented in Victoria, South Australia, Western Australia and Tasmania by  
Johns & Waygood Ltd.

Represented in Queensland by British General Electric (Queensland) Pty. Ltd.

### Hydraulic Power Supply

**System.**—The Company provides hydraulic power under a high pressure system at 700 lbs. per square inch in the main city area of the City of Sydney. From an adequate and independent freehold supply, water is pumped to the main and auxiliary pumping stations. It is thence supplied at high pressure through the Company's mains network throughout the city.

**Mains.**—The feed mains for distribution are controlled and maintained in an efficient condition by the Company to ensure dependability of service. There are 60 miles of such high pressure mains throughout the city, the layout being approximately as shown on the attached map. More detailed and comprehensive information may be had on request.

**Continuity.**—The layout of mains and the provision of auxiliary pumping stations, accumulators, etc., are such as to ensure continuity of power supply and efficient pressure regulation. Equipment connected to this system may be depended upon to work reliably and positively when required on opening the operating valve. This power is available at any moment day or night throughout the year.

**Application.**—Lifts, entrance gates, wool dumps, industrial presses, plastic moulding presses, etc. Outstanding advantages of hydraulic machinery are simplicity, low initial cost, reliability and low maintenance costs. These factors, considered in conjunction with the power charges, show hydraulic operation to be the most economical solution to many engineering problems.

A special added feature is the adaptability of this continuous service to fire sprinkler and drenching systems, reducing insurance charges against fire risk by 50 per cent.

**Charges.**—The power charges are low, and are normally rated on the volume used, special contracts may be arranged for large consumers.

**Technical Service.**—The Company maintains an efficient and experienced technical staff at its head office for the assistance of prospective consumers. Complete and authentic information regarding the Company's power and its applications can be obtained only from the Company.

### Hydraulic Lifts

The hydraulic type of lift, which has given such reliable performance in the past, is still the most satisfactory type for certain requirements, especially where low first cost, simplicity and reliability are of major importance.

**Application.**—For short travel, heavy duty goods lifts in banks, warehouses, garages, factories, etc., and for passenger lifts with medium speed and travel, the direct or "g" or suspended hydraulic lift is generally more suitable than the electric lift. In doubtful cases we will be pleased, as suppliers of either type, to give competent and impartial advice.

**Life and Operation.** There is practically no limit to the life of the Hydraulic Lift. The simplicity of its mechanism and the few wearing parts give very low maintenance costs and unrivalled reliability.

**Installation.**—By virtue of a wide experience in the design and operation of hydraulic lifts, the Company is able to make installations to suit widely varying needs, strictly in conformity with all safety requirements and rules of the Scaffolding and Lifts Department and other regulating bodies.

**Maintenance.**—An efficient maintenance staff and stock of spare parts is retained to secure for clients' special supervision and services by the Company most competent and interested in procuring the useful service of hydraulic lifts.

**Information.**—Reliable technical information, together with cost estimates and layout data, will be supplied on request.

### General Hydraulic Engineering, Hydraulic Presses and Valves.

The Company is able to advise on or to carry out contracts for complete hydraulic installations for wool-dumping plants, industrial presses, etc., including all accessory equipment such as installers, accumulators and piping layouts.

Comprehensive stocks of standard valves and fittings for high and low pressure are carried, and special or semi standard designs can be made up at short notice. Prices on application.

### Electric Stairways

The electric moving stairway is often the best method for handling large volumes of traffic for one floor only. In department stores it greatly increases the value of store space above the street level, and at transport terminals it is the only satisfactory method of handling the continuous volume occurring at peak traffic periods.

For this service the Express Westminster system shows marked superiority over any other in smoothness, silence, safety and reliability.

The stairway is entirely self-contained on a rigid steel truss supported from the building steel work and occupying a minimum space out-



### Electric Stairways

side the effective stairway dimensions. Three standard widths of 2 ft. 2 ft and 4 ft., with respective capacities of four, six and eight thousand passengers per hour, are available.

The balustrade may be of polished woodwork, or any other material to harmonize with surroundings, and is entirely supported from the main truss.

We will be pleased to give detailed technical and layout data, or to advise on applications, where this type of passenger transport is proposed.

(Left)—Electric Stairway Installation

(Continued on next page)



# MAP

CITY OF SYDNEY

HIGH PRESSURE MAINS  
of the  
HYDRAULIC POWER  
C AND  
HYDRAULIC LIFTS LTD  
182-204 Dowling Street,  
Waterloo

## Note

The run of High Pressure  
Mains is shown in Red  
Approximate Scale  
400 Yards to 1 inch

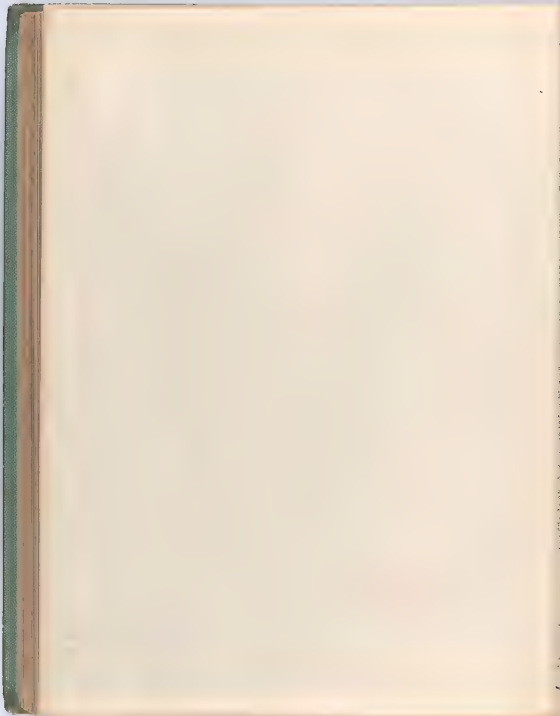
MAIN PRESSURE  
PUMPING STATION  
AND ENGINEERING  
WORKSHOPS

NO 3 PUMPING STATION

NO 1 PUMPING STATION

TO COMPANY'S FREEHOLD & RESERVOIR  
WITH PUMPING STATION, CONNECTED TO  
MAIN PRESSURE PUMPING STATION AT  
DARLING HARBOUR

RAMSAY'S CATALOGUE



From the collections of Sydney Living Museums / Historic Houses Trust of NSW

Express-Westinghouse  
ELECTRIC LIFTS

42

As representatives for Australia of the Express Lift Co. of England, we are able to supply electric lift equipment of the highest grade for all applications, from the small low speed single lift to the high speed large traffic bank of the modern office building. In addition, we provide a complete and efficient organisation for the repair and maintenance of existing installations.

All work is carried out in accordance with the requirements of the Scaffolding and Lifts Department, the Fire

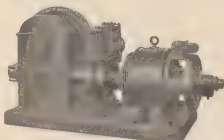
Underwriters' Association, S.A.A. wiring rules, and the requirements of the supply authorities.

The following general information applies to new contracts. Questions relating to existing installations or more detailed enquiries for technical or layout data, prices or delivery, will be promptly answered on application to the offices of the Company.

Main Driving Machine

(Geared Lifts)

For speeds up to and including 300 feet per minute the driving unit consists of a motor-driven worm reduction gear raising the lift ropes by means of the hoisting or traction sheave. The electric motor is mounted with the gear unit on a rigid cast-iron support from the building frame by structural steel bearers. These bearers are preferably supplied by us ready drilled to the building, while the motor and its foundations are being erected.



A Standard Geared Lift Machine

A rope collecting sheave under the machine may be required in some cases, depending on the lift and driving sheave dimensions.

For details of the gearless high speed lift machine see following page.

Control Systems

Several standard control systems for different speed load and supply conditions are available, perfected by Express-Westinghouse practice in England and America. These combine simplicity and continuity of service with the utmost economy and safety to passengers from the lowest to the highest speeds. With any of the control systems may be combined various methods of operation such as the following:

- Car Switch giving automatic smooth starting and stopping under control of a driver.
- Single Call Push Button—giving automatic service on the pressing of car or landing push buttons. A non-interference device ensures that when the lift is being used by one passenger, all other buttons are ineffective. No driver is required.
- Dual Operation as under (a) or (b) are both available things over from one system to the other being made from a keyed switch in the car.
- Single Button Multi-call—giving operation without a driver as under (b), but answering all calls for service on route.
- Automatic Levelling—for use on driver operated or push button system of medium speed where a small amount of creeping at low speed to the floor level is not objectionable.
- Indicator Levelling—employed on heavy lifts with variable voltage control (see opposite page) to give smooth stops accurately at floor level without loss of time in creeping.

Control Equipment

All Controllers, Fuses, relays, and other electrical equipment are of most modern design and construction as to insulation, contact design, accessibility, etc. Special provision is made for a minimum of wiring and ease of inspection.

Indicator Systems

Indicating and signalling devices range from the simple mechanical call annunciator in the car for a single lift to the most comprehensive self-enclosed illuminated call systems with signalling lanterns and automatic dispatch devices interconnected by traffic banks of lifts. As the service to be indicated from a given installation varies widely with the building system, it should be carefully investigated at the outset.

Doors and Enclosures

We can supply standardised Malbourn doors for goods or passenger lifts of the vertical or horizontal sliding angle, two or three speed types. When required, these can be fitted with manual or power operators manufactured by our Malbourn associates Johns & Wapwood Ltd. (see page 43 for details).

Cars and Fittings

Lift cars and fittings may be chosen from a wide range of designs to suit the building requirements. Variation in car design is allowed for in the tender by a P.C. amount, but we recommend that this be handled through us to ensure compliance with all requirements and regulations.

Accessories

Standardised door locks, push buttons, wall limits, buffers, starters, etc. of a range to cover all needs, are designed and manufactured to suit the existing service and safety requirements.

Provision in Building Plans

We strongly recommend that clients avail themselves of our technical and practical assistance by inquiring as early as possible at our office for specific data on layout requirements, type of equipment and approximate cost. We will be pleased to have one of our engineering staff submit the required information.

Modern Developments in

HYDRAULIC LIFT PRACTICE

This company has now, by continuous research and development, produced an improved lift system combining the smoothness of hydraulic driving power with the convenience of electric operation and the advantages of modern features such as automatic levelling, power-operated doors and illuminated indicator systems.

The equipment is eminently suited for stores, banking chambers, hotels and other applications where ultra high speed is not essential, but where elegance, comfort and reliability are called for.

We would be glad to give detailed information to suit particular applications on request.

## EXPRESS-WESTINGHOUSE

British Built Gearless Lifts  
and

## Variable Voltage Control Equipment for Geared Lifts

Sole Representative and Selling Agents for Australia:  
HYDRAULIC POWER ELECTRIC AND HYDRAULIC LIFTS  
LTD., 82-204 DOWLING STREET, WATERLOO,  
Queensland by BRITISH GENERAL ELECTRIC (QUEENSLAND) PTY. LTD.Representative for Victoria, South Australia, Western Australia  
and Tasmania:  
JOHNS & WAYGOD LTD.,  
LAND PTY. LTD.

Lift problems become increasingly electrical as the speed increases. The Express-Westinghouse systems are developed from many years' and electrical experience backed by great research and engineering resources. Examination of any piece of the equipment used will reveal sound electrical principles faithfully applied.

Lifts operating on this system have been installed for exacting vertical traffic conditions in all parts of the world, including the highest speed yet used, and large banks of lifts with the most advanced and efficient operating refinements.

The advantages offered are unrivalled reliability, comfort to passengers, and accuracy of operation.

## Main Driving Machine

The gearless motor is made in several ratings covering all the load requirements and operating speeds from 100 to 400 f.p.m. Note that for speeds of 200 to 400 f.p.m., two to one roping gearless drives are used. The gearless machine gives perfect smoothness and economy of power, and is essential for high running speeds.

At speeds below 200 f.p.m., a geared lift machine, as described on the previous page, is used with variable voltage control where high grade operation is required.

## Variable Voltage Control

With this system the lift power is controlled through a motor generator set to give smooth operation and economy of power at starting and stopping. As only light field currents are involved in the control of the lift, very low maintenance and long life of parts are assured.

## Low Voltage Control

The control equipments are operated from 55 volts using standard telephone type switch gear in sealed replaceable units. The low voltage minimizes risk of electrical breakdowns involving stoppage and sometimes fire or personal injury, and the reliability of telephone type switch gear under heavy operating conditions is well known. In the event of breakdown the standardized sealed units can be replaced in a matter of seconds, leaving the lift in operation while the fault is investigated.

## Inducer Levelling

Fast and accurate landings at floor level must be made automatically if full traffic capacity is to be obtained from high speed lifts. The Express-Westinghouse system of inducer levelling achieves this result smoothly and quickly without any crawling at low speed to the floor. It involves no extra moving parts or tapes on the car or in the well, and maintains the accuracy independent of the loading.



The City Mutual Life Assurance Society Ltd.'s Building, Sydney, Designed by Em J. Sodersten, F.R.A.I.A. Lifts installed by us.



The Mutual Life & Citizens Assurance Co. Ltd.'s Building, Sydney, Designed by Bates, Smart & McCutcheon. Lifts installed by us.

## Type of Operation

While many schemes of operation are available for particular building requirements, the following notes may be of assistance for preliminary consideration:—

(a) CAR SWITCH INDUCTOR LEVELLING—Used in conjunction with satisfactory indicators, this system is remarkably efficient for heavy traffic, especially in multi-storey buildings where passengers often require direction and information. It also has the advantage of low first cost and simplicity.

(b) TWO BUTTON MULTI-CALL—This gives practically the same traffic capacity as the former system, without requiring a driver. Inducer levelling is included as standard.

(c) DUAL SINGLE CALL—Combines system (a) with ordinary single call push button service after hours.

(d) DUAL MULTI-CALL—Combines system (a) and (b) for buildings with fairly heavy after hours traffic.

(e) INTER-CONNECTED SIGNAL (for banks of lifts only)—Properly applied, this is the best known way of handling large volumes of traffic. Each lift is started by a driver, who also registers stops required by his passengers on push buttons in the car. Stopping is performed automatically in response to car or hall buttons. Comprehensive signals are included as standard. Power-operated doors are used, opening automatically as the lift comes to a floor.

## Control Features

Many standard features are provided, such as automatic starting and stopping of the M.G. Set of push button lifts with infrequent traffic, automatic "parking" of multi-call lifts when not answering calls, and the Safe T Ray system of passenger protection, when power doors are used.

## Indicating Systems

These are of great importance on high speed lifts in view of the value of the equipment whose efficiency is affected. Self-cancelling illuminated car signals are generally suitable for car switch lifts. For banks of several lifts, indicators should be inter-connected and an automatic despatching system provided. Hall signals to waiting passengers will also often speed up the service on a bank of lifts.

## Choice of Equipment

Selection of the correct ratings and control operation may in many cases result in the saving of a lift and the otherwise rentable floor space that it occupies. Most careful consideration at any early stage is therefore justified.

We are pleased to offer to clients our assistance, with detailed information for any particular requirements.

# JOHNS & WAYGOOD LIMITED

## LIFT MANUFACTURERS

Registered Office:

CITY ROAD, SOUTH MELBOURNE, VICTORIA

TELEPHONES: MX 1241 (8 lines)

Representatives:

N.S.W. & Queensland: HYDRAULIC POWER, ELECTRIC & HYDRAULIC LIFTS LTD.

South Australia: NEWTON, McLAREN LTD.

Western Australia: C. A. HINE & CO. LTD.

Tasmania: F. H. BURGESS & CO.

Wellington, N.Z.: H. MOULT LTD.

Auckland, N.Z.: ELECTRIC CONSTRUCTION CO. OF N.Z. LTD.

### Gearless Lifts

Car speeds—300 F.P.M. and upwards.  
Loads—to suit all variations of lift service.

### Geared Lifts

Passenger Lifts — Goods Lifts — Service Lifts.

Alternating or Direct Current.  
Variable Voltage Control.

Resistance Control.  
Loads—50 to 15,000 pounds.  
Car speeds—50 to 400 F.P.M.

### Special Types

Hospital Stretcher Lifts.

Hospital Food Lifts.

Motor Car Lifts.

Electric Dumbwaiters.

Orchestra Platform Lifts.

Escalators.

Hydraulic Lifts.

Hydro-Electric Lifts.

Hand Power Lifts.

Personal Service Lifts for Private Residences.



INSTALLED IN  
ALL AUSTRALIAN  
STATES AND  
NEW ZEALAND

### Lift Accessories

Car Position Indicators—all types.

Annunciating Systems—all types.

Illuminated Thresholds—all types.

Machine Unit Door Frames—all

types.

Rollsaway Door Hangers—all types.

Johnsway Silent Door Closers—all

types.

Johnsway Electric Power Door

Operators.

Johnsway Electric Car Door

Operators.

Peelle Type Fireproof Landing Lift Doors.

Peelle Type Wire Mesh Goods Lift

Car Doors.

Double Folding Lift Doors.

Automatic Floor Levelling.

Light Ray Control of Lift Doors.

Receding Fenders for Power

Operated Doors.

### Service

Maintenance—Testing—Repairs.

Quick service by expert mechanics any time—day or night.

Lift arrangement drawings and other planning services readily available.

### Plant and Workmanship

All parts are standardised. Every lift is tested in the test lift well in our works prior to erection on the site. Our organisation includes the drawing office, developmental and research section, electrical, machine, fitting, pattern, carpenter, structural steel, painting, outside erection, maintenance and testing departments.



A block of office buildings in Swanston Street, Melbourne. All equipped with lifts by Johns & Waygood Ltd.



A busy block of Melbourne Department Stores. All equipped with lifts by Johns & Waygood Ltd. Dept. of Information photographs.

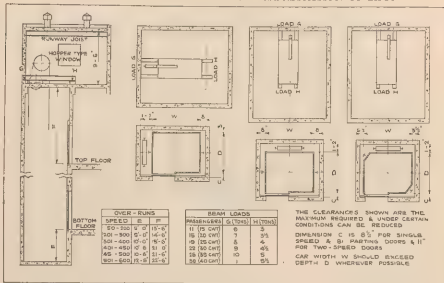
KAMAY'S CATALOGUE

# JOHNS & WAYGOOD LIMITED

## INFORMATION ON THE DESIGN AND SPECIFICATION OF LIFTS

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PRELIMINARY DETAILS FOR DESIGN OF ELECTRIC LIFT WELL AND MACHINERY ROOM

### Standard Control Systems for Electric Lifts

- Car switch—single speed.
- Car switch—multi speed.
- Car switch—automatic landing.
- Dual control.
- Automatic—single call.
- Automatic—single button collective.
- Automatic—two button collective.
- Collective—with and without an attendant.
- Signal control.
- Inter-connected signal (2 or more lifts).
- Zone control (2 or more lifts).
- Department store control.

### Average Sizes of Lift Cars

	Wide	Deep
Office Buildings . . . . .	6'-0"	5'-0"
Department Stores . . . . .	7'-6"	6'-0"
Hospital Bed Lifts . . . . .	6'-6"	8'-0"
Dumbwaiters . . . . .	2'-6"	2'-6"
Motor Car Lifts . . . . .	9'-0"	18'-0"
Warehouse Goods Lifts . . . . .	7'-0"	6'-0"
	Wide	H gh

### Suggested Standard Sizes of Finished Door Openings

Single Speed . . . . .	2'-0"	7'-0"
Bi-Parting . . . . .	3'-6"	7'-0"
Two-Speed . . . . .	4'-0"	7'-0"
	4'-0"	7'-0"

For further information ring MX 1241, and ask for Lift Service Department.

### ESCALATORS

In buildings where the transport of large numbers of the public between any two successive floors is involved, such as department stores, apparatus in continuous motion possesses certain definite advantages. These advantages are best realised by the installation of moving stairways or Escalators.

Our Escalators are built to suit all purposes.

Single File, 70 to 90 F.P.M.; 3,000-4,000 persons per hour.

Double File, 70 to 90 F.P.M.; 6,000-8,000 persons per hour.

These Escalators are constructed as self-contained units and may be installed singly or in a duplex arrangement.

The Escalators are reversible, enabling them to be operated in either direction. They also can be brought to rest and used as ordinary flights of stairs.

The handrail moves at the same speed as the stairs, enabling passengers to rest their hands on the handrail throughout the entire journey.

Sound deadening material is used wherever the motion of moving parts would in the ordinary way cause a considerable amount of noise.

The starting and stopping are effected by simple push buttons conveniently located.

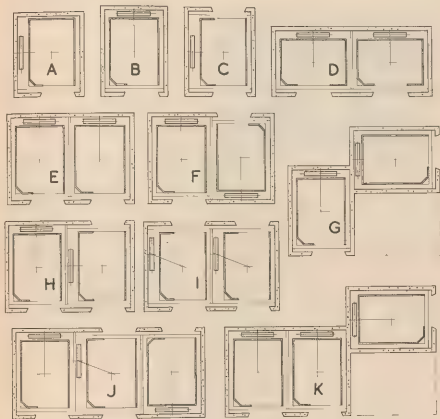
Building layouts for Escalators will be gladly supplied. Ring our Service Department, MX 1241.



## ARRANGEMENT AND GROUPING OF HOSPITAL LIFTS

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ABOVE PLANS ARE PRINTED ACCURATELY TO A SCALE OF  $\frac{1}{8}$ " TO 1 FOOT

## Notes on the above Plan

- A. Standard arrangement for single lift.
- B. Used where available space for width of lift well is limited.
- C. Used where front and rear entrances are necessary.
- D. Used where passenger traffic predominates, as in a Nurses' Home installation. The shape of the cars, however, allows stretchers to be accommodated in a case of emergency.

## E. Arrangement for two inter-connected lifts.

In the case of installations consisting of two or more lifts, to cater for both passengers and services, it is sometimes desirable to have the lift entrances separated, so that passengers and services do not use the same corridor. The entrances, however, should be close enough to each other to permit either to be used as an alternative to the other in case of need.

## F, G, H, I, J and K exemplify this arrangement.

Arrangements H and I should be avoided if possible owing to complications in the control of the lifts and the doors.

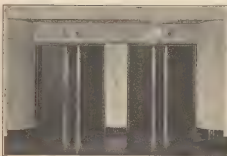


— KEMSEY & CATALOGUE

## LIFT DOOR EQUIPMENT

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Two Speed Doors at Buckley & Nunn Ltd., fitted with Johnsway Power Operators.

## Range of Equipment

• Johns & Waygood Ltd. manufacture a complete range of standardized door equipment for all types and sizes of lifts. The popular widths of door openings are as follow:

Single Speed Doors . . . . .	33 in. wide
Centre Parting Doors . . . . .	42 in. wide
Two Speed Doors . . . . .	48 in. wide
Swing Slide Doors . . . . .	60 in. wide

## Machine Unit Steel Door Frames

- Our Machine Unit door frames comprise a steel frame on which all the door accessories are assembled before erection.
- This construction results in great reliability and permanence.
- The frames are usually lacquer sprayed in colour, to form the jamb linings.
- Where a plain finish is all that is required, they also form the door architraves.

## Rollway Door Hangers

All steel -ball bearing—self-aligning—silent operation



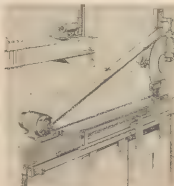
### Johnsway Dual Type Silent Door Operators (patented)

- Doors fitted with Johnsway dual type operators are positively silent in closing, even if an attempt is made to deliberately slam them
- The operators will automatically close and lock the door with any travel from the full open position to within 1 in. of the closed position
- They have no projecting latch lever on the edge of the door to catch clothing.
- They are fitted with both electrical and mechanical interlocks of robust construction.

## Johnsway Car Door Operator—Electric Type

Most automatic lifts require car doors, and the Johnsway Electric Car Door Operator has overcome the disabilities usually associated with car doors

- It positively closes the car door and ensures that the lift is not rendered inoperative through the car door being negligently left open.
- It can be arranged to open the car door as the lift is levelling and thus save time.
- It eliminates floating platforms, spring closers and holdbacks.
- It obviates the awkwardness of having to hold the car door open whilst a passenger or a following passenger is entering or leaving the car.
- It may be easily manually operated if necessary, whilst its opening or closing action can be readily stopped by hand.



Johnsway Electric Car Door Operator  
Fitted to Two Speed Car Doors.

## Johnsway Electric Door Operators

- Johnsway electric operators can be applied to all types of passenger lift doors.
- They are exceptionally quiet in operation

- They can be manually operated from inside the car in the event of power failure.
- A special feature is the smooth manner in which they may be stopped (and reversed if necessary) at any position during both opening and closing.
- They are suitable for either automatic or attendant controlled lifts.
- Protective features are provided on automatic lifts to stop and reverse the doors should they meet any obstruction when closing. These features comprise either infra-red (invisible) light cell units or receding fenders with sponge rubber buffers.

For further information regarding Lift Door Equipment—ring MX1241—Lift Service Department



# VARIABLE-VOLTAGE CONTROL GEARLESS AND GEARED LIFTS

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**GEARLESS LIFTS**

are necessary when the speed  
required is above 400 F.P.M.

**GEARED V.V. LIFTS**

are used for speeds up to  
400 F.P.M.

**VARIABLE-VOLTAGE CONTROL**, with its quiet, smooth and rapid acceleration and deceleration, has brought the realization of perfect vertical transportation.

**VARIABLE-VOLTAGE CONTROL** is the most modern system of lift operation and has made possible the very high speeds now in use, and when used for the medium speed geared lifts, gives the same high quality of control which is so necessary to achieve rapid, smooth and accurate floor stopping

Many Fine Buildings are equipped with Variable-Voltage Lifts by Johns & Waygood Ltd., including the following:—

**GEARLESS LIFTS:**

	F.P.M.
A.M.P. Society . . . . .	2-450
State Electricity Commission	3 450
State Savings Bank . . . . .	2 450
Myer Emporium . . . . .	7 450
Manchester Unity Bldg. . . . .	1-600
Bank of N.S.W. . . . .	2 450
A.C.A. Building . . . . .	2 450
P.L.A. Building . . . . .	2-450
Century Building . . . . .	2 600

**GEARED V.V. LIFTS:**

Manchester Unity Building	2-350
Royal Melbourne Hospital	8 350
Phosphate House . . . . .	2-350
Commercial Bank . . . . .	1-400
Union Bank . . . . .	1 400
G. J. Coles & Co. Ltd. . . . .	1 200
Leviathan . . . . .	2 350
Women's Hospital . . . . .	2 300
Children's Hospital . . . . .	2 200
Selfgoods Club . . . . .	1 350
Taxation Department . . . . .	4-350
M. & M. Tramways Board . . . . .	2-350
Buckley & Nunn Ltd. . . . .	2 350
Georges Ltd. . . . .	2-300
Bank of N.S.W. . . . .	2-350
Vaughan House . . . . .	2 375



Century Building

All types of control are available, some of which are briefly described below:—

**ZONE CONTROL:** For two or more inter-connected lifts, Zone Control is the most efficient control yet devised. Such lifts carry more passengers per car mile of travel, as they waste no time or current in useless running, and cut waiting time to the minimum. Can be used with or without attendants.

**SIGNAL CONTROL:** This control is for two or more inter-connected lifts controlled by attendants

**DEPARTMENT STORE CONTROL:** For use in retail stores. The lifts are controlled by attendants and stop at all floors.

**TWO BUTTON COLLECTIVE CONTROL:** Popular for single passenger lift installations. Records all calls and answers them in proper sequence. It also distinguishes between passengers wishing to travel up and those who want to go down. Can be arranged for attendant control also.

**SINGLE BUTTON COLLECTIVE CONTROL:** For single lift installations. Records all calls and answers them in proper sequence, but does not distinguish between UP and DOWN passengers.

**SINGLE CALL AUTOMATIC CONTROL:** Suitable up to 3 or 4 floors for passenger or goods lifts.



# WAYGOOD-OTIS (AUST.) PTY. LTD.

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HEAD OFFICE & WORKS: HAYES ROAD & DUNNING AVENUE, WATERLOO, N.S.W.  
Telegrams: Lyndentree, Sydney.

## BRANCH OFFICES AND SERVICE STATIONS:

MELBOURNE: 31 City Road, S.C.A.  
Telegrams: Lyndentree, Melbourne.

BRISBANE: Albert House, Albert Street.  
Telegrams: Lyndentree, Brisbane.

HOBART: 120 Collins Street.  
Telegrams: Lyndentree, Hobart.

NEWCASTLE: Tyrrell House, Telford Street.

ADELAIDE: 68 Wyatt Street.  
Telegrams: Lyndentree, Adelaide.

PERTH: Pastoral House, St. George's Terrace.  
Telegrams: Lyndentree, Perth.

## ASSOCIATED COMPANIES:

Waygood-Otis Ltd., London.

Waygood-Otis (N.Z.) Ltd., Wellington, N.Z.

Waygood Otis (S.A.) Ltd., Capetown, S. Africa.

Otis Elevator Company, New York.

And Offices in the Chief Cities throughout the World.

## Products

Electric Lifts or Elevators for Passengers, Goods and Service; Escalators; Doors and Enclosures, Lift Cars; Door Closers; Lift Position Indicators; Signals and Accessories; Lift Service and Repairs.

## Planning Service

The laying out and deciding upon an elevator system in a modern building is one of the most important items with which the architect has to deal, and one which will vitally affect the success of the building as an investment. In more than eighty years of manufacture and installation of elevators, the Waygood-Otis organisation has accumulated a vast amount of data as to elevator performances and requirements for buildings of various types and heights. We are glad indeed to place this information at the disposal of the architects and owners, and will, without cost, submit recommendations for elevator equipment in proposed buildings. Our nearest office is at your service at any time.



## Design and Manufacture

All Waygood-Otis Machines, Motors, Controllers, Safety Devices, and other apparatus are manufactured in their entirety in Waygood-Otis factories and from Waygood-Otis designs, which are the result of years of experience. The Waygood-Otis elevator is, therefore, not an assembly of non-related parts, but of parts which are so designed and constructed as to operate together as a unit.

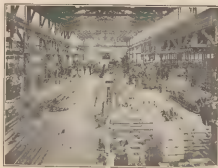
## Elevator Accessory Apparatus

We offer a complete line of elevator accessory apparatus and appliances. These are all made in Waygood-Otis factories with the same care and under the same supervision and high standards of workmanship as are the elevator machines. This ensures to the purchaser appliances manufactured particularly for the machines with which they are to be used, and, therefore, more efficient than ordinary commercial parts assembled with other makes of apparatus.

## Waygood-Otis Service

To derive the fullest possible benefit from any installation of Waygood-Otis elevators, it is essential that the machines be properly maintained; otherwise, they will not provide the long term of service of which they are capable.

We are prepared to take care of machines under many forms of Waygood-Otis Service. This includes a regular examination, oiling and cleaning of the apparatus at stated intervals, and advising the owner or tenant of matters that should have attention.



View of Main Bay, Waterloo Works

## Maintenance

Under Waygood-Otis Maintenance Service we assume full care of the machine, making regular examinations and adjustments, furnishing all parts required for replacement, including ropes and any of the other wearing parts, at a stipulated sum per year.

## Modernising

Existing lifts can often be brought up to date for a moderate expenditure, improving their appearance and efficiency. We are glad to co-operate with architects and owners and to offer suggestions for this work.

RANDS' CATALOGUE

## ELECTRIC ELEVATORS

## Types

Electric Elevators as now installed are divided into two classes: the single wrap geared traction, and heavy-duty freight traction. The single wrap traction has superseded the old drum type, as it is much more efficient, and has the inherent safety feature of traction drive. The gearless traction type of elevator is used exclusively for the higher speeds and for the highest class of service.

## Single Wrap Geared Traction Elevators

On this type of elevator the car is driven through a driving sheave, operated through worm-gearing by a motor of 80 to 110 rev. per minute. Car speeds range up to 315 feet per minute.

The type of machine is generally used for freight work and for intermediate passenger requirements where conditions of use, load, speed, and required service would not warrant the use of the higher grade gearless elevator.

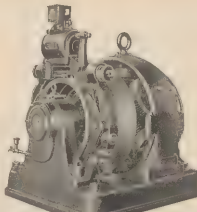
## Gearless Traction Elevators

The gearless traction elevator is the highest development of the electric elevator, and provides car speeds up to 600 feet per minute. This type of elevator employs a slow-speed high-torque motor, with a driving sheave mounted on a spider, which is integral with the armature shaft. An intermediate gearing is thus eliminated, as the slow-speed motor enables the car to be driven directly from the sheave, by means of ropes which pass around the sheave and then to the car and the counter-weight.

Rapid and smooth operation, starting and stopping, and very high efficiency are features of this machine.

## Micro-Levelling Elevators

Increased demands for higher efficiency in elevator service, for both high-speed passenger and heavy-duty freight elevators, have been met by Waygood-Otis in the Micro-Levelling Electric Elevator, with all types of control, and of either the gearless traction or geared traction type. When the car reaches the micro zone for the floor where it is intended to stop, the car is brought to a halt. It is this landing, irrespective of load and speed, and also maintains the platform at that level, regardless of changes in the load on the platform or stretch of ropes. All this levelling operation is performed entirely automatically and independently of the operator.



Gearless Traction Machine.

This eliminates the stumbling hazard on passenger elevators, and obviates the possibility of damage to goods or trucks to often caused by uneven levels when loading and unloading freight elevators. It eliminates false stops at the floors, thus saving time in transferring passengers or freight, and increasing the quantity and quality of service. It reduces the cost of current, saves wear and tear on the apparatus, and prolongs its life.

## LIFT DESIGNING DATA

(FOR PRELIMINARY DESIGN ONLY)

## General Consideration

In seeking to answer the frequent enquiry "Given the dimensions of the land and the number of stories, how many elevators, and of what capacity, will be required for this building?" experience shows that this presents quite an involved problem, which can only be referred to here in a general way, as it is not possible to formulate any hard and fast rules which would adequately cover all conditions encountered. It is frequently found on large installations that several alternative combinations of different equipments would give approximately equal service. The following data, therefore, is only approximate and should only be used when considering the problem in its early stages.

## Number and Size

The number and size of elevators is governed by many considerations, as: (1) character of building; (2) height of building; (3) available area; (4) average number and lengths of stops per trip; (5) speed and type of elevator used; (6) source of power; (7) net available area per person in office buildings, usually varies between 55 and 115-160 square feet is the usual density for an office building having a large number of small offices. For the available area of floor per person in factories, hospitals, assembly rooms, etc., consult the Board of Health Regulations. The basis for deciding the car area is to allow two square feet per passenger and four square feet for attendant. Weight of passengers calculated at approximately 150 lbs. per person should be arranged with the width greater than the depth to facilitate quick loading and unloading, and deep, narrow cars should be objectionable at all times. A standard office building lift car is one of 2,500 pounds capacity, these passenger cars should be about five feet or a little less in depth. Minimum height of cars twelve-seven feet.

We have all facilities for determining the type, load and speed, and space requirements of lifts and escalators. Consult us during the early planning of the building and

Type of Service.	Speed in F.P.M.
Short rise, heavy goods hoists . . . . .	80-100
Offices, warehouses, stores, five stories and under . . . . .	150-200
not intensive service . . . . .	200-300
Offices, warehouses, stores, five stories and under . . . . .	200-300
intensive service . . . . .	200-300

## Arrangement of Entrances, Hatchways, Motor

## Room

Two entrances and corner guides are to be avoided, if possible.

The type of door should be such that ingress and egress will be free as possible—usually 45 per cent. of the width of the car—in order to provide standing room for the attendant.

For automatic passenger lifts, single sliding doors, 3 ft. 8 in. wide, are usually fitted. These must be provided with glass or wire panels to give vision of car from landing.

When two or more lifts are placed side to side, wide cars result in the machines being spaced further apart, a very desirable position, particularly with large machine-room equipment.

Machine-rooms should be well ventilated, light, and clean if possible. Where machines have heavy parts which it may be necessary to remove from time to time for inspection, it is advisable to locate a beam with hand holes above them to facilitate handling.

## Size of Motor Room

Motor room sizes vary considerably according to the equipments to be accommodated and the layout conditions of such installation must be considered separately. For each equipment, actual requirements should be obtained from the Lift Engineers, as this ensures adequate space being made available in the correct position. With gearless machines, a second dry floor over well-hole, 4 ft. 6 in. below main motor room floor, is highly desirable and nearly essential. Overhaul requirements are reversed by the speed and are constant.

All information will be given free of cost.

The following speeds of lifts are considered standard practice.

Type of Service.	Speed in F.P.M.
Plats up to five floors . . . . .	100-125
Plats above five floors . . . . .	150-300
Department stores, floor to floor service . . . . .	300-500
Offices, 8-12 floors—intensive service . . . . .	300-600
Offices, 8-12 floors—intensive service . . . . .	400-600

—BRASS &amp; CATALOGUE

## 42 Signal Control

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Automatic Signal Control, with which is combined Microlevelling and Unit Multi-Voltage Operation, and Power-Operated Doors, provides the highest class of intensive service. The elevator is operated by means of buttons in the car to correspond to the floors served, and "up" and "down" buttons outside the hatchway at each floor. With this form of control, the attendant merely presses buttons in the car indicating the floors at which passengers wish to alight. When the attendant releases the hatchway doors in leaving the main floor, or in discharging and receiving passengers, at other floors the doors close automatically, the car immediately starts automatically and runs to the next floor for which a button has been pressed, where it stops automatically, and the door opens automatically, this cycle being repeated for all floors for which there are passengers. Intending passengers press buttons on the floors, indicating the direction in which they wish to travel. This call is then registered directly on the controller of the first elevator travelling in the desired direction. This car then stops automatically at the floor. The approach of a car is indicated to waiting passengers by means of an "UP" or "DOWN" light at each landing.

## Department Store Signal Control

This control is a development of the signal control applied to department stores. It supersedes the old Department Store Control with which the lift stops at every floor. The attendant registers for stops required by the passengers in the car, and the passengers on the landing register their required calls by pressing the landing buttons. Wasted stops are thus avoided and service is speeded up. If desired, "lock-in" buttons can be supplied to maintain service at any particular floor during busy periods.

## Collective Control with and without Attendant

This form of control gives many features of the Signal Control with change-over facility for automatic control. In both instances the registration of the calls and consequent avoidance of wasted journeys, and certainty that all calls will be automatically dealt with, are features of this system, which is superseding the old dual control.

## Collective Automatic Control

Collective Automatic Control is a variation of the Automatic Push Button Control. The elevator is operated by the passengers themselves, who press buttons in the cars indicating the floors to which they wish to travel. Passengers on the floors call the car by means of pressing buttons indicating the direction in which they wish to travel. With this type of control, the elevator automatically answers all signals from waiting passengers in the direction in which it is travelling. This type of elevator may be installed for traffic conditions where it is desired

## CONTROL SYSTEMS FOR ELECTRIC ELEVATORS

to dispense with the operators, and car speeds up to 600 feet per minute are available under these conditions. Micro levelling may also be supplied for any duties with this control, except the smaller capacities at low speeds.

## Unit Multi-Voltage Control

This employs a motor generator driven from the mains supplying the current to the lift motor at the maximum rate without losses in starting resistances, etc. This type of control produces the fastest rate of acceleration and retardation, and without discomfort to the passengers. It permits higher car speeds, smoother operation, handles more passengers per hour, and consequently reduces the number of elevators required, and for busy lifts is economical in power consumption.

Multi-voltage control can be applied to most of the control systems described on this page.

## Automatic Push Button Control

This type of control can be furnished for most slow speed applications where non-intensive service is expected, and is a cheaper substitute for Collective Push Button.

## Car Switch Control

This type of control can be furnished for practically all types of machines, but is not recommended against signal or collective with or without attendant.

## Double Button Control

This control has particular application for slow speed goods lifts as an alternative to car switch or push button control. It consists of Up and Down buttons in the car and on each floor; constant pressure of a button will call the car to any floor if it is not already in use, and pressure of either button in the car will cause it to travel in the desired direction.

## AUXILIARY EQUIPMENT

**Signal Equipment.** The Waygood-Otis Company is now offering Waygood-Otis Signals of all types, which are also distinctively Waygood-Otis in manufacture, embodying the same high standard of workmanship and materials as Waygood-Otis Elevators. The design and operation of these Signals are the result of the thorough knowledge of the requirements of elevator service, and they are built to perform as an integral and co-ordinate part of the elevator and signal equipment.

**Signal Fixtures** for both car and corridor are of new and artistic design and finish. The principal systems are the Hall Light and Car Signal System, and also the Hall Light and Car Annunciator Signal System. Additional features include car position indicators, electrical and mechanical call indicators and starters panels.

**Door Closers.**—We are also offering various types of the up, down, and the differing conditions for which they will be used.

**Electric Door Operators.**—Waygood-Otis Electric Door Operators are available for the automatic operation of batchway doors.

**Safety Shoe.** This is a device to prevent power-operated doors from closing whilst passengers are entering or leaving the car. It is positive in action, reliable and inexpensive. It consists of a movable rubber shoe attached to the front edge of the car door and is connected to a switch which controls the movement of the door. It is extremely light and quick in its action on meeting any obstruction.

**Electric Dumbwaiters** are available in different forms of control, as required for various types of service. These machines are of a new and improved design, manufactured in the highest class of elevator machinery.

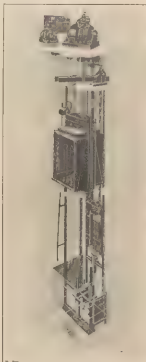


Illustration of Assembled Gearless Lift Equipment

## ESCALATORS

Escalators have become increasingly popular in all types of buildings where it is desired to move people in great numbers continuously and rapidly. In large department stores and particularly in stores where basement service is required, they have become practically a necessity. They promote the flow of customers from the street level and virtually provide the equivalent of ground floor sales facilities on all floors which escalators serve. They are made reversible and operate continuously, carry large numbers of people comfortably, quickly and without exertion. The use

of comparatively small motors results in quiet operation and low running costs.

Waygood-Otis Escalators are made in three sizes:-

Distance Between Balustrading	Capacity per Hour
2 feet	4,000
3 feet	6,000
4 feet	8,000

Angle of inclination—30 degrees.

Consult us early to ensure correct position of floor beams.

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Typical Illustration

## LIST OF TYPICAL INSTALLATIONS

## DEPARTMENT STORES

## SYDNEY.

David Jones Limited  
 Farmer & Co. Ltd. (Lifts and Escalators)  
 Anthony Harders & Sons Ltd.  
 Rydney Snow Ltd.  
 Harders Bros. Ltd. (Lifts and Escalators)  
 Mark Foy Ltd. (Lifts and Escalators)  
 Murdoch's Ltd.  
 McCulloch's Pty. Ltd.  
 Nock & Kirby Ltd.

## BRISBANE

Finney, Isles & Co. Ltd.  
 Penneys (Lifts and Escalators)  
 McWhirter's Ltd.  
 Robert Reid & Co. Ltd.  
 T. C. Horne Pty. Ltd.

## MELBOURNE

Myer Emporium Ltd. (Escalators)  
 Foy & Gibson Ltd.  
 Consumers' Tradeways  
 Mutual Stores Ltd.  
 Leaden Stores Ltd.  
 Camm.

## ADELAIDE:

Myer Emporium Ltd.  
 Milne, Anderson Ltd.  
 James Marshall & Co.  
 John Martin & Co. Ltd.  
 Chas. Birks & Co. Ltd.  
 S. J. Coles & Co. Ltd.  
 Cash & Carry Ltd.

## PERTH:

Boss Brothers, Perth.  
 Foy & Gibson (W.A.) Ltd.  
 Chas. Moore (Escalators).  
 Harris, Scarle & Sanderson Ltd.

## HOSPITALS

## NEW SOUTH WALES:

115th Australian General Hospital.  
 Sydney, N.S.W.  
 King George V Hospital.  
 St. Vincent's Hospital.  
 Royal Alexandra Hospital for Children.  
 Wahroonga Sanatorium.  
 Peace Memorial Hospital, Manly.  
 Newcastle District Hospital.  
 Maitland District Hospital.  
 Cessnock Hospital.  
 Mt. St. Joseph's Hospital, Young.  
 Barrina District Hospital, Bowral.  
 Lewisham Hospital.  
 Broken Hill District Hospital.  
 Bathurst District Hospital.  
 St. John of God Hospital, Cobar.

## VICTORIA:

General Military Hospital, Heidelberg.  
 Alfred Hospital.  
 Prince of Wales Hospital.  
 St. Andrew's Presbyterian Hospital.  
 Women's Hospital.  
 Balaclava District Hospital.  
 Ararat Hospital.  
 Mildura Base Hospital.

## SOUTH AUSTRALIA:

Royal Adelaide Hospital.  
 Children's Hospital.  
 Calvary Hospital.  
 North Adelaide Private Hospital.  
 Port Pirie Hospital.

## QUEENSLAND:

115th Australian General Hospital.  
 R. J. Berg Hospital.  
 St. Andrew's Hospital.  
 Mater Misericordiae Hospital.  
 Ipswich General Hospital.  
 Rockhampton Hospital.

## WESTERN AUSTRALIA:

Perth Hospital.  
 King Edward Hospital.  
 Infectious Diseases Hospital.  
 St. John of God Hospital.

## TASMANIA:

Equitation Hospital, Hobart.  
 Hobart General Hospital.  
 Launceston Hospital.  
 Launceston General Hospital.

## OFFICES, ETC.

## SYDNEY:

Shell Co. Ltd.  
 Bank of New South Wales, Head Office.  
 Bank of New South Wales, O'Connell St.  
 Amalgamated Wireless (Australia) Ltd.  
 Australian Provincial Assurance Association Ltd.  
 Rural Bank.  
 Railways Administrative Building.  
 Manufacturers' Mutual Insurance Ltd.  
 T. & G. Building, Elizabeth Street.  
 Commonwealth Bank, Head Office.  
 Wynyard Station (Escalators).  
 Town Hall Station (Escalators).  
 Sun Newspapers Ltd.  
 Her Majesty's Arcade (Lifts and Escalators).  
 Mercantile Mutual Insurance Co. Ltd.  
 Tattersall's Club.  
 Byron Hall Flats, Darlinghurst.  
 Government Savings Bank, Martin Place.  
 Sydney Morning Herald.  
 Prudential Assurance Co. Ltd.  
 Municipal Fish Markets.  
 D. Ship Rubber Co.  
 T. N. T. Plant, Yarrowood.  
 G.P.O., Sydney.  
 Australian Consolidated Industries Ltd.  
 Small Arms Factory, Lithgow.  
 Cambikas Hotel, Orange.  
 University Chambers.  
 Transport House (Lifts and Escalators).  
 Macleay Regis Flats, Darlinghurst.  
 Asbestos House.  
 Chalks House.  
 Science House.  
 Assembly Hall.  
 B.M.A. Building.

## MELBOURNE:

Australia Hotel.  
 Commonwealth Bank.  
 Victoria Barracks.  
 T. & G. Head Office.  
 Hotel Alexander.  
 Albany Chambers.  
 Colonial Mutual Life Assurance Society Ltd.  
 Collins House.  
 State Savings Bank.  
 Howay Court.  
 A.M.P. Building.  
 National Bank of Australasia.  
 Manchester Unity Building (Escalators).  
 Menzies Hotel.  
 Victorian Railways Power House.  
 G. J. Coles (Lifts and Escalators).  
 Royal Insurance Company.  
 Capel Court.  
 E. L. Yencken's Building.  
 The Victoria Palace Limited.  
 Ordnance Factory, Maribyrnong.  
 Hammer Hotel.  
 Commercial Hotel, Milder.

## ADELAIDE:

Savings Bank of South Australia.  
 Bank of Adelaide.  
 Shell Company Building.  
 Bank of New South Wales.  
 Imperial Chemical Industries.  
 Colonial Mutual Building.  
 Goldsborough, Mart & Co.  
 Commercial Banking Co. of Sydney.  
 T. & G. Building.  
 Advertiser Newspapers Ltd.  
 Adelaide Electric Supply.

## BRISBANE:

State Government Building.  
 A.M.P. Building.  
 Colonial Mutual Building.  
 Commonwealth Bank.  
 T. & G. Building.  
 Taxation Building.  
 New Farm Power House.  
 National Bank of Australasia.

## PERTH:

Colonial Mutual Building.  
 City Mutual Life Assurance.  
 West Australian Chambers.  
 Dalrymple & Co.  
 Macmillan's Mutual Building.  
 Emu Brewery.  
 Gledhill Building.  
 Perth Power Station.  
 Hotel Adelphi.  
 West Australian Newspapers.  
 Goode Durrant.  
 Yorkshire Insurance Building.

## TASMANIA:

T. & G. Building, Hobart.  
 Hydro Electric Commission, Hobart.  
 Holyman & Sons, Launceston.  
 T. & G. Building, Launceston.  
 Cascade Brewery.  
 Telephone Exchange, Hobart.  
 H. Jones & Co. Pty. Ltd., Hobart.  
 Ordnance Stores, Hobart.  
 Cadbury-Pry Purcell, Claremont.

## OVERSEAS:

New Government Offices, Sany, Fiji.  
 Burns, Philp & Co., Suva, Fiji.

# WHITE ELEVATORS PTY. LTD.

LIFT MANUFACTURERS AND ENGINEERS

COLLINS & WILLIAM STREETS, ALEXANDRIA, NEW SOUTH WALES

Telephone MX1574

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4

## PRODUCTS

Passenger, goods and service lifts, of all speeds and capacities.

Lift machines and all types of lift control panels.

Wood and metal lift cages.

Wood and metal lift doors and enclosures.

Pecile type fireproof doors for goods lifts.

Grille gates for lift cars.

Door hangers, tracks, jambs and unity frames.

Power door operators and spring closers.

Car position indicators of all kinds; control buttons, door locks and contacts.

Lift maintenance, service, repairs, and modernisation.

## FEATURES

WHITE lifts are silent, smooth, safe and reliable. Particular care is given to all decorative work. All equipment is designed for long life with low replacement bills.

## APPLICATIONS

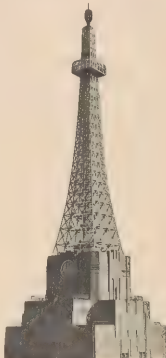
Every class of lift is catered for: offices, stores, public buildings, factories, hospitals, hotels, residential flats. We take a particular pride in installing lifts in difficult locations. (A.W.A. Tower, Sydney, is served from base to platform by a WHITE lift.)

Let your Lift Contractor hang the enclosure doors and supply the necessary hardware. Badly hung doors with unsuitable hardware can ruin an otherwise good lift.

A recent development is a special miniature lift for private homes.

## HAND LIFTS

Hand-power service lifts are recommended where the electric service lift is ruled out by its cost. WHITE hand lifts are scientifically designed with ball bearings throughout, are easy to operate, and enjoy a high reputation for reliability. We have installed many hand-power lifts in public and private premises.



A.W.A. Tower, Sydney, on roof of A.W.A. Building. WHITE passenger lift travels between top floor of building and the platform near top of tower. Many unusual problems were encountered in the installation.



CONTRAST: The large machine illustrated handles a load of 42 passengers or 3 tons at 250 feet per minute; passenger or goods service. The small machine is designed to operate a service lift with a duty of 100 lbs. at 75 feet per minute.

## Service to Architects, Engineers and Builders

As specialists we are happy at all times to provide Architects, Engineers, Builders, and others interested in building projects, with full preliminary information respecting lift requirements. Our many years of experience allows us to make useful suggestions as to:-

Number of lifts needed  
Speed and load  
Method of control  
Probable cost  
Constructional details  
General layout

Car sizes and well clearances  
Types of door equipment  
Details of entrances  
Design of cars

And many further details

This service is free and without obligation. Avail yourself of it before your plans are too far advanced.

—BARRAY'S CATALOGUE





**LIFT DOORS**  
and  
**CARS**

SECTION

**43**

SECTION

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Australian Metal Products Catalogue

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# AUSTRALIAN METAL PRODUCTS PTY. LTD.

GENERAL OFFICE AND PLANT:

REAR NICHOLSON & SCOTCHMER STREETS  
NORTH FITZROY, VICTORIA

Inter-State Distributors:

ADELAIDE—Messrs. Geo. Willis & Co. Ltd.,

Gilbert Place, Adelaide, South Australia.

BRISBANE—Mr. C. F. Willers, 36 Eagle Street PERTH—Messrs. Geo. Willis & Co. Ltd., 113 St. George's Terrace, Perth, West. Australia.

HOBART—Barringer & Lansell Pty. Ltd., 207 209 Elizabeth St. Hobart.

LAUNCESTON—Barringer & Lansell Pty. Ltd., 100 Wellington St., Launceston

## PRODUCTS

"Dowel" Hollow Metal and Flush Panel Fire-resisting Elevator Doors. "Dowel" Unity Elevator Door Frames. Elevator Entrance Fronts. Elevator Cars.

## ELEVATOR DOORS

are made of 18 gauge ingot base furniture steel pressed to shape and rolled to give sharp arrises. They are lined with slab cork to avoid metallic ring. All joints are reinforced, welded, and finished flush, with no possibility of broken joints. Where necessary, doors are reinforced to take hangers, closers, locks, etc. These doors have been tested and accepted by the Fire Underwriters' Association of Australia, and can be made to suit any architectural design required.

## ERECTION

All doors and frames are erected and fixed in position by our experienced workmen, but if required they can be fixed by others, in which case all necessary instruction and details are provided to ensure correct installation.



## ELEVATOR FRONTS

Elevator entrances and fronts should be complete in every detail under one contract to ensure perfect operation and to simplify responsibility.

## UNITY FRAMES

These elevator door frames are made of 12 gauge steel pressed to shape in one piece, welded together and made integral. They combine cabinet jamb, sill, track, hanger housing and angle struts, and assure accurate alignment and smooth running of doors. They are built in with the masonry walls, and all the strain of operation of doors evolves on the frame, with no risk of fracture to the walls. The fixing of doors is simplified, as the necessary drilling, etc., is done in the workshop. Non-slip treads are provided on thresholds and adjustable rubber buffers where necessary. A hinged apron plate over the hanger serves the dual purpose of flushing the wall and as a dust cover.

## FINISH

All doors and external faces of frames are finished in high-grade lacquer in selected tones. Undercoats are baked on, thus giving a non-impervious and lasting finish.

## SPECIFICATION

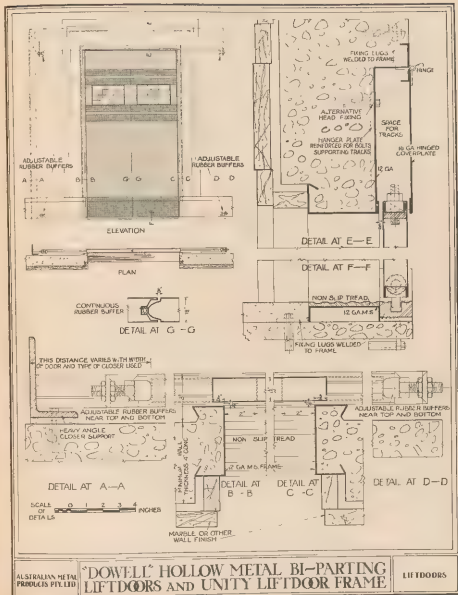
Doors shall be "Dowel" Hollow-metal Fire-resisting doors made of 18-gauge Furniture Steel, as accepted by the Fire Underwriters' Association of Australia; locked, welded and lined with slab cork, reinforced as required to take hangers, closers, etc. Doors shall be (single-speed) or (two-speed) or (Bi-parting) as shown on the plan. Design to be selected.

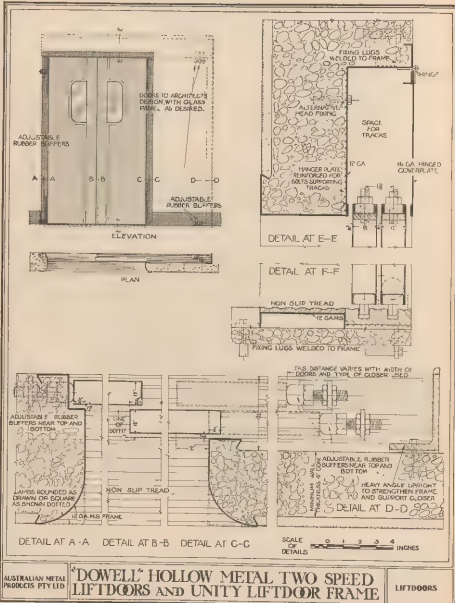
UNITY FRAMES shall be made of 12-gauge Pressed Steel welded together, combining cabinet jamb and trim, hanger housing, hinged apron, angle struts, lead-filled treads, and buffers as required.

FINISH—All metal to be thoroughly sanded, washed with benzene, filled, primed (baked on), and finished in high-grade lacquer in selected tones.

GLAZING shall be electro-copper to design to be selected.

FIXING.—Doors and frames to be supplied and installed by Australan Metal Products Pty. Ltd., but masonry walls shall be built by the general contractor after the frames are stood in position.





**LOCKERS, STEEL  
SHELVING AND  
PARTITIONS**

SECTION  
**44**  
SECTION

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CATALOGUES 1 to 3

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# AUSTRALIAN METAL PRODUCTS PTY. LTD.

GENERAL OFFICE AND PLANT

REAR NICHOLSON & SCOTCHMER STREETS  
NORTH FITZROY, VICTORIA

[Inter State Distributors]

ADELAIDE—Messrs. Geo. Wills & Co. Ltd.,  
Gilbert Place, Adelaide, South Australia.

BRISBANE—Mr C. F. Wiers, 36 Eagle Street, Brisbane. PERTH—Messrs. Geo. Wills & Co. Ltd., 133 St.  
George's Terrace, Perth, West. Australia

HOBART—Barringer & Lansell Pty. Ltd., 227-229 Elizabeth St. Hobart.

LAUNCESTON—Barringer & Lansell Pty. Ltd., 100 Wellington St. Launceston

## Products

Sanymetal Partitions are built for Toilets, Lavatories, Urinals, Dressing Rooms, Showers, Smoke Screens, Ward Screens and Wainscot, for Industrial, Office, Commercial and Public Buildings, as well as for Schools, Churches, Hospitals, and Institutional Buildings, etc.

## The New Sanymetal Unit Panel Toilet Partition

This new Sanymetal Toilet Partition responds to a popular demand for a metal partition embodying every requisite for a good appearance and long life, and, combined with simplicity of design, represents an economic proposition unequalled.

## General

A simple and substantial design (embodying several basic patents), neat and clean cut appearance characterise these products. Rust-resisting finish, tight joints, elimination of corners and cracks that collect dust and dirt, turned-in edges and special pedestal supports, all contribute to the exceptional sanitary qualities of these products.

## Construction

Sanymetal Toilet Sections are usually made up of two units—a flush panel partition joined to a supporting post, and a flush door. The panel partition is supported from the wall face on N.P. wall brackets set 1 in. clear of wall, while the door post is supported on a N.P. round pedestal 6 ins. above floor. Partitions and posts are made of 18-gauge special flattened steel sheets locked or welded together at edges. They are ribbed and reinforced internally to ensure a flat surface. The post is recessed to take the partition, thus avoiding any open joints. Doors are constructed of 20-gauge metal, ribbed and reinforced similar to partitions and posts. No joints are visible. All partitions,

doors and posts are filled with a sound-resisting material which avoids any metallic ring of the metal. A rectangular, tubular metal bend rail brace holds the complete unit in a rigid position. This flush panel construction, together with the impervious finishes given to the metal, avoids any fear of corrosion. All doors are fitted with Sanymetal full floating gravity hinges, Indicator Latch and continuous bumpers

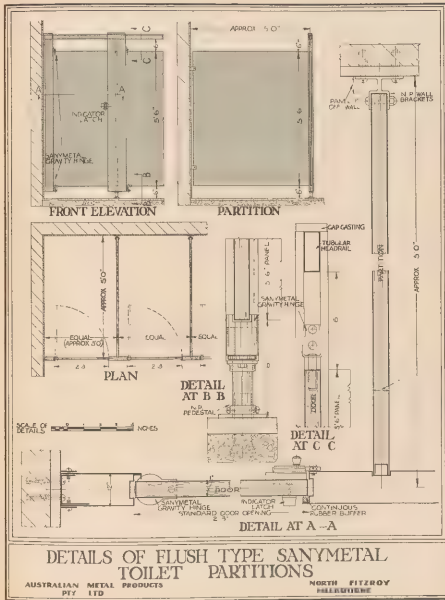
## Finish

Particular attention is given to finish. Partitions and doors present an impervious hard enamelled surface, very easy to clean, and non-absorbent of moisture. After a priming coat of rust-resisting paint, two coats of high-grade enamel are then applied and each coat baked on at a high temperature. Standard colours are Olive Green and Battleship Grey. When delicate colours, such as white or cream, are desired, it is preferable to use lacquer finishes baked hard, as we have found from experience that this is more satisfactory for such colours.



## Sanymetal Full-Floating Gravity Roller Hinges

These are springless, operating entirely from force of gravity. They are strong, simple, positive in action, and containing nothing to break or wear out. The lower hinge, containing the gravity-operated mechanism, is completely encased and assembled as a unit in the factory. Within this, and thoroughly protected from dirt and moisture, are the inclined track and hardened steel roller secured by a special alloy steel self-lubricating pin. The hinge is universal in its adaptability to any type of swing door of any material. Doors may be self-closing, self-opening,



# DETAILS OF FLUSH TYPE SANYMETAL TOILET PARTITIONS

AUSTRALIAN METAL PRODUCTS  
PTY LTD

NORTH FITZROY  
MELBOURNE

double-acting, out-swinging, or in-swinging. They may come to rest at any desired angle.

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# ERECTOR

Erection is simple and easy. No drilling of partitions is required on the job. Partitions are securely fastened at floor and walls, so that installation remains rigid shake and rattle proof. Doors do not bang.

## Architect's Specification

### METAL PARTITIONS

Partitions indicated on plans (or describe location) shall be entirely constructed of special patterned steel sheets. Partitions and Posts of 16 gauge metal and Doors of 20 gauge.

All Doors, Partitions, Posts and Head Rail bracing shall be of flush panel construction with all raw edges concealed. They must be ribbed and reinforced internally to give a perfectly flat surface, and be filled with a sound-resisting material to avoid any metallic ring. Partitions shall be fixed to wall with nickel-plated brackets to give 1 in. space between wall and partition (or alternatively, fixed to special wall channels). Posts

shall be set on nickel plated base castings fixed to finished floor. Provide a rectangular head rail bracing to top of posts. Posts shall have a continuous rubber bumper to closing side of door.

### HARDWARE

Doors shall be equipped with encased "Sanymetal" full-floating gravity hinges, indicator latch and combination lock and coat hanger with bumper. All fittings shall be nickel-plated, applied with nickel plated bolts and cap nuts.

### FINISH

All metal shall be thoroughly sanded, washed with benzine, filed and primed, and two coats of Olive Green (or Battleship Grey) baked on, or (if White or Cream finish is specified) and two coats of White (or Cream) applied in a lacquer finish.

### SUPPLY (OR INSTALLATION)

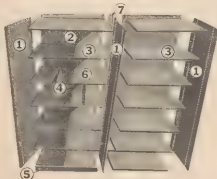
The whole of the above metal partitions shall be supplied and installed by the Australan Metal Products Pty. Ltd., or

The whole of the above metal partitions included in this contract shall be supplied and delivered at the site by the Australian Metal Products Pty. Ltd. The Contractor shall install in a workmanlike manner and in accordance with the manufacturer's instructions.





## MODERN STEEL EQUIPMENT . . . .



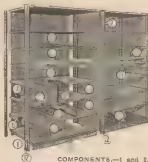
### COMPONENTS:—

- |                    |   |
|--------------------|---|
| 1. Rolled Upright. | 6. Kickplate.                               |
| 2. Solid Back      | 6. Shelves Punched for Dividers.            |
| 3. Shelves.        | 7. Back Joining Strip (for extension bays). |
| 4. Dividers.       |   |

### ROLLED UPRIGHT SHELVING

Brownbult Rolled Upright Shelving is ideal for medium weight storage in shops, stores and showrooms. The standardised steel members can be readily erected, added to, or speedily dismantled. The standard finish is a pleasing olive green—other colours available at slight extra cost.

Standard sizes normally stocked are:—UPRIGHTS: height, 86 in. Adjustability, every 1 in. in height. SHELVES: width (side to side), 36 in., 30 in., and 24 in.; depth (front to back), 12 in., 15 in., and 18 in. Shelves are provided punched to take dividers every 3 in. across the shelf. Vertical dividers, bin fronts, cardholders and other accessories as required. The illustration shows components for a typical two-bay stack. It will be seen that each extension bay for adding to either side of an "initial" bay saves an upright, the centre upright being common to both bays.



COMPONENTS:—1 and 2. Angle Posts. 3. Shelves. 4. Backs. 5. Ends. 6. Bin Front. 7. Optional Angle. 8. Dividers (Flat Type). 9. Dividers (Rolled-Flat). 10. Angle 1 and 2. 11. Kickplates. 12. Feet. 13. Label Holder (small type). 14. Label Holder (large type). 15. Flush Bar. 16. Ledge Support (side shelf support).

### L - TYPE STEEL SHELVING

(Of heavier construction than the Rolled Upright type, Brownbult L-type Shelving is designed to meet the most exacting heavy storage requirements. An outstanding advantage is the principle of optional reinforcement, which enables the storeman to strengthen individual sections to accommodate medium, heavy or extra-heavy loads. Each installation thus has a 3-load capacity for the small cost of the optional reinforcing members.

Standard sizes are as follows:—UPRIGHTS: 87 in., 95 in. Adjustable at every 2 in. in height. SHELVES: width (side to side), 24 in., 30 in., and 36 in. Depth (front to rear), 12 in., 18 in., and 30 in. BACKS and ENDS: Solid or open, as required.



In the room shown at left 57 sq. ft. of shelving giving 150 cubic feet of storage space.

The room shown at right with STORMOR gives 100 cubic feet of storage space in 22 bays of shelving.

## STORMOR

STORMOR—a British invention protected by world-wide Patents—is a revolutionary new storage system giving up to 50 per cent. greater storage capacity without extra floor space. The advantage of STORMOR is that aisle space is reduced to a minimum by the use of mobile units in front of a row of fixed shelving. These mobile units move on steel rails fitted to the floor and can be so arranged to give quick accessibility to any item in any row. This SPACE CONSERVATION feature permits one corridor serving a number of rows of shelving instead of one aisle to each two rows of stationery shelving. Present installations can be converted to STORMOR, or complete new STORMOR systems installed. All particulars available on request from the sole Australian licensee, E. T. BROWN LTD.



# Steelbilt LIMITED

A Wormald Brothers Industry

HEAD OFFICE: PARK WORKS, YOUNG STREET, WATERLOO, SYDNEY, N.S.W. MX 1071.  
BRANCH: WILLIAMSTOWN ROAD, FISHERMEN'S BEND, MELBOURNE. MX 3171.

Elsewhere represented by Wormald Brothers as follows:

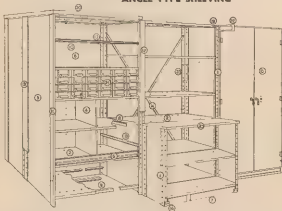
South Queensland: 137-148 Edward Street, Brisbane. B 5806.  
South Australia: 119 Waymouth Street, Adelaide. Central 6467.  
West Australia: 124 St. George's Terrace, Perth.  
Tasmania: 31 Argyle Street, Hobart. Hobart 4557.  
Newcastle: 24 Hunter Street, Newcastle. B 2735.

North Queensland: Flinders Street, Townsville. 2212.  
New Zealand: Custom House Quay, Wellington. 44-739.  
Christchurch: 234 Cashel Street, Christchurch. 24-952.  
Auckland: Queen Street, Auckland.

## STEELBILT STANDARDISED SHELVING, LOCKERS, CUPBOARDS, etc.

"Steelbilt" standardised shelving is a flexible product allowing additions or alterations to be made to it whenever necessary. Its proven superiority to all other types of shelving is an established fact. It is designed to take care of all types of loading and weights.

### ANGLE TYPE SHELVING



Weight Carrying Capacity of Shelves

Size of Shelf.	A.	B.	C.	Size of Shelf.	A.	B.	C.
Deep. Wide.	lbs.	lbs.	lbs.	Deep. Wide.	lbs.	lbs.	lbs.
9 in. x 36 in.	440	640	—	18 in. x 30 in.	640	800	—
12 in. x 30 in.	640	800	—	18 in. x 36 in.	440	640	—
12 in. x 36 in.	440	800	—	18 in. x 42 in.	280	400	—
12 in. x 42 in.	280	400	—	24 in. x 30 in.	640	800	—
15 in. x 30 in.	640	800	—	24 in. x 36 in.	440	640	720
15 in. x 36 in.	440	640	—	24 in. x 42 in.	280	400	260
15 in. x 42 in.	280	400	—	30 in. x 36 in.	400	550	720

A — Equals plain shelf

B — Shelf reinforced with optional angle reinforcements on front and back flanges

C — Shelf reinforced with the addition of optional angle reinforcements on front and back flanges. End shelf supports on the end flanges and two optional angle reinforcements bolted together and placed underneath the centre of the shelf

D — Illustrates how further reinforcements can be made according to the requirements

NOTE — The end shelf supports do not add greatly to shelf supporting strength, except for the 30 in. depth or over. In the case of the latter, however, while the addition of the end shelf supports adds to the strength of the flanges, the centre of the shelf would bend considerably, so that the addition of the double angle reinforcement underneath the shelf, as explained in item C, is necessary. In calculating the above weights, shelves were allowed 1 in. deflection without any permanent sag.

MATERIALS used in construction: Posts, Gages, Partition Sheets, Backs, Dividers, 22 Gauge Doors, 19 Gauge Shelves, Base Strips, 18 Gauge

### DIMENSIONS:

#### Heights

6 ft. 11 in., 7 ft. 11 in., 9 ft. 11 in.

#### Widths—

30 in., 36 in., 42 in.

#### Depths—

9 in., 12 in., 15 in., 18 in., 24 in., 30 in.

### COMPONENT PARTS:

1. Posts.
2. Shelves.
3. Partition Sheets.
4. Dividers.
5. Diafronts.
6. Backs.
7. Base Strips.
8. End Shelf Supports.
9. Optional Angles Reinforcements.
10. Back Clips.
11. End Cover Strips.
12. Centre Cover Strip.
13. Intra-rodiate Strip.
14. Braces.
15. Doors.
16. Upright Shoes.
17. Label Holders.
18. Flush Bars.
19. Corner Brackets.
20. Counter Tops.
21. Nests of Drawers.
22. Black Card Holders.
23. Splicing Plates.

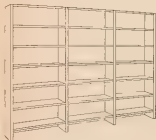


# Steelbilt LIMITED

A Wormald Brothers Industry

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## TABULAR TYPE SHELVING

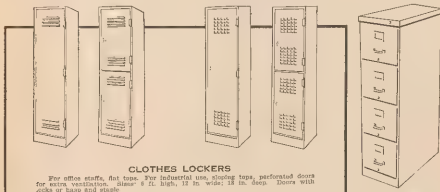
Suitable for light type of storage, including Textile Goods, Packages, Books, Papers, etc.  
1 in. shelf adjustment. Heights: 4 ft. 11 in., 7 ft. 11 in. Width of Units: 36 in., Depth, 12 in., 15 in., 18 in.

SPECIAL NOTE: Designers and builders of multi-trend library book stacks and equipment in collaboration with Snod & Co., U.S.A.



## LIBRARY SHELVING

1 in. shelf adjustment. Types: Plugged  
12 wall, single sided. Free Standing  
Single or Double Sided.



## CLOTHES LOCKERS

For office staffs, flat tops. For industrial use, sloping tops, perforated doors for extra ventilation. Sizes: 6 ft. high, 12 in. wide; 18 in. deep. Doors with locks or lumps and staples.

FILING CABINETS  
Pocket and Quarto  
500



## CUPBOARDS

Dimensions  
Security Type -  
12 in. wide  
Executive Type -  
24 in. wide  
24 in. high,  
20 in. wide  
1 in. for lock  
1 in. for lock



## P.A.N. CABINETS

Dimensions  
12 in. x 24 in. x 24 in.  
12 in. x 24 in. x 24 in.  
12 in. x 24 in. x 24 in.

Standard Finish - Olive Green. Other colours available at small extra cost.



**KITCHEN AND  
HOSPITAL EQUIPMENT**

*(See also under "Gas" and "Electricity")*

SECTION

**45**

SECTION

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CATALOGUES 1 to 5

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# GARDNER & NAYLOR PTY. LTD.

Manufacturers of Kitchen, Cafeteria and Hospital Equipment

Head Office and Works:

Cor. KAVANAGH and IRELAND STREETS, SOUTH MELBOURNE, S.C.A.  
No. 2 Factory and Electro-Plating Department, Dynon Road, North Melbourne

Telephones: MX 2268 (3 lines)

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Hot Press and Bain Marie Unit.

## Hot Press and Bain Marie Units

An essential unit to every Survey, enabling food to be served " piping hot" to the Dining Rooms. With its stainless steel top and trim, a "germy" feeling would grace any kitchen or service.

**Construction.**—Top: Heavy gauge stainless steel. Panels: Stainless steel or mild steel with baked enamel finish to suit colour scheme, with stainless-steel or chrome plated trim.

**Sliding Doors.** Welded steel frames with stainless steel or baked enamel finish steel panels. Mounted on ball bearings running on special steel track—very smooth in operation.

**Bain Marie Vessels.**—Welded stainless steel or aluminium, including curving wells complete with quadrant.

**Dry Heat Bain Marie units** also available with thermostatic control.

**Serving Shelf** of stainless steel provided for full length of Hot Press.

**Valve Panel.**—Valves fitted in neat recessed panel with special indicator handle.

**Operation.**—Steam, Gas, or Electric.

**Dimensions.**—Standard Units  
No. 1 Unit—Floor Space, a ft. 3 in. x 2 ft. 4 in., includes 1 food vessel  
No. 2 Unit—Floor Space, 3 ft. 6 in. x 2 ft. 4 in., includes 12 food vessel

**Special Design.**—Hot Press units can be supplied to suit any special design or requirement.

### Service Provision Required:

- 1 Concrete pad mounting allowing for suitable toe space. If desired, however, this can be incorporated in the steel frame of the unit.
- 2 Electric, gas or steam service.  
No. 1 Unit: 5 KW electric, 1 in. gas, or 1 in. steam  
No. 2 Unit: 5 KW electric, 1 in. gas, or 3 in. steam
- 3 Vent hood over, connected to exhaust ventilating system
- 4 1 in. waste connection  
3 in. water supply connection



Vegetable Steamer.

## Vegetable Steamer

**ATMOSPHERIC TYPE (illustrated).**  
This well-finished unit is suitable for all cooking purposes where steaming is required.

**Construction.**—Interior: heavy gauge tinned copper with special runners in 1 in. x 1 in. waves wire baskets. Outer lining: sheet steel with baked enamel coat.

**Insulation.**—A special feature of our unit is the efficient insulation which surrounds the steaming chamber.

**Steam-Tight Door.** Reinforced mild steel frame paralleled with stainless steel on both sides, held by 4-point levelling gear with rubber gasket seal.

**Capacity.**—Five heavy gauge tinned wire baskets, 26 in. x 16 in. x 3 in.

deep, which are supplied with the unit.

**Dimensions.** 1 ft. 9 in. wide x 2 ft. 2 in. deep x 4 ft. 4 in. high

### Service Provision Required:

- 1 Floor under graded to drain.
- 2 Cold water supply
- 3 Heating units: 1 in. gas, 1 in. steam or 5 KW electric power
- 4 A vent hood connected to ventilation system is recommended

### PRESSURE TYPE.

A pressure type Multiple Compartment Steamer constructed of heavy cast iron with enamel finish can also be supplied.

## "Invincible" Dish

**SAVES TIME, LABOUR, SPACE, BREAKAGES, TEA TOWELS.**

Manufactured in Two Models—

- 1 New Model, Doorless Machine
- 2 Standard Door Type Machine, suitable for confined spaces

### SPECIFICATION.

**General Construction.**—The casing and wash tank are fabricated of stainless steel.

**Pump.** Entirely new design, supplying 5.50 gallons per hour under pressure to give thorough and positive cleaning. Gunmetal casing and impeller, stainless steel shaft mounted on ball bearings—dry well fitted under gland and drained to waste.

**Motor.**—One horse power 3-phase 1 unit.

**Washing Spray.**—Taper Pointing type mounted on ball bearings gives the positive scouring action necessary for effective washing.

**Baskets.** Fixed sprays of gunmetal, easily removable for cleaning.

**Rinse Sprays.**—A special feature of the "Invincible" is the effective rinse spray which enables the plates, when washed, to dry quickly to a glass surface. Plates can be placed into operation again after 30 seconds.

**Subsidiary Heating.**—A.D.P. "Electric" Electric Immersion Heating



"Invincible" Dish Washing Machine.

## Dish Washing Machines

Elements (2) are provided for heating washing tank.

**Splash Curtains.** Are fabricated of plastic.

**Tray Racks.**—Six trays are provided with each machine for plates, cups and cutlery.

**Operation** is remarkably simple only two conveniently placed controls—(1) lever controls washing operation, (2) valve operates rinse spray.

**Reliability.** In the design of the "Invincible" emphasis has been placed upon reliability. Servicing is reduced to a minimum.

**Capacity.**—4,000 pieces per hour

### Service Provision Required:

- 1 Dish washing benches used by 10 or more. We offer our service in supplying the most efficient layout of these benches.
- 2 Electrical connection for 1 h.p. motor and 3 KW tank heating element.
- 3 1 in. hot water supply
- 4 1 in. waste connection or grease trap
- 5 Graded floor to drain if possible

### Dimensions

- 1 Case Type 3 ft. 6 in. wide
- 2 In deep, 4 ft. 6 in. high
- 3 Door Type 3 ft. 6 in. wide, 2 ft. 3 in. deep



**"Invincible" Cafe Fountain for Tea and Coffee Service**

This handsome unit is designed to automatically supply boiling water for tea making and is usually fitted with water-jacketed side urns for milk and coffee.

A patented feature of the "Invis-ible" ensures that only boiling water can be drawn from the central four

**Construction.** The unit is constructed of heavy gauge copper with tinned interior. The exterior finish is heavy chromam plate. The water jacketed coffee and milk urns have a stainless steel interior and are made in either 2, 5, or 7 gallon capacities. Urn draw off corks have spouts, "anti-splash" feature.

### Steam Jacketted Pans, Stock Pots and Jet Pot Tables

**Construction.**—New y planished standard steel in the reinforcements of the Illinois Department, by whose notice is noted.

Tilting pans are mounted on strong rectangular columns with wheel-operated worm gear tilting device. The lid may be lifted by manual treadle operation.

Fixed type units are provided with  
standard capacity standard draw off unit  
Standard Capacities (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 83

**Foot Space Required:**  
 20 gallon—3 ft 10 in x 4 ft  
 25 gallon—4 ft 2 in x 4 ft  
 30 gallon—4 ft 6 in x 5 ft

### Electric Fish Fryer

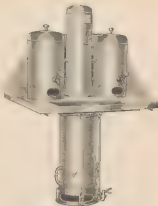
Fabricated of heavy gauge welded stainless steel on welded steel frame, with ample draining surround also of stainless steel graded to frying bowl.

Heating Elements.—Special "Helicoid" Oil Heating Elements are pro-

The unit is supplied complete with a set of suitable lined wire baskets, each 196 in. x 154 in. x 8 in. deep.

Service, Pray and Required

- The unit is usually mounted in a service counter in which is provided a drip tray with suitable waste in water supply.
- 1 in. gas, 1 in. steam, or 2 KW electric heat.
- A vent hood connected to a dust ventilation system is recommended.
- Dimensions.** Counter top as required. 3 ft. 6 in. x 2 ft. 6 in.
- The "Invisi-Air" is widely used throughout the U.S., a few of the larger users being: It is used in all cafes through-out the U.S.
- Westworths (Vie.) Ltd., Victor's (Vie.) Ltd., Buckley & Ryan Ltd., (Vie.) Ltd., and many others.



"Invincible" Cafe Fountain (with water jacketed milk and coffee urns).

Service Provision Required

- Impressive efficiency  
in stock, when in the  
air stream (14).  
Hot water supply with valve.  
FLOOR under graded to drain  
A vent hood over connected to  
exhaust ventilation system
- Gee and Electric Stock Pots**  
We also manufacture pure electric and  
gas heated stock pots complete with  
11 in. bore "Easy clean" pattern  
nickel-plated draw-off cocks
- Jet Pot Tables**, with either 3 or 6  
burners, and of capacity to meet  
special requirements, can be supplied

## Electrical Loading: 5 W for single

**Service Provision Required**

- Electrical connection
- A vent hood over connected to exhaust ventilation system

**Dimensions:** 2-compartment and over, measurements 4 ft 6 in x 2 ft 9 in x 3 ft high with splash back upstand. Dimensions, frying bowls, 20 in x 13 in x 9 in.



### Steam Jacketted Tilting Pan

### Stainless Steel Draining Boards and Dish Washing Benches

18 gauge stainless steel, all welded  
securely joined to a bonded layer  
sealed on underside with sheet steel

### Soda Fountains

Designed to suit the type of service required, complete with soda arms, refrigerated syrup bar, milk storage, bottle storage, ice cream, etc., included.

### Cafeterias, Quick Lunch Service, Canteens

We undertake the complete servicing and installation of Cafeterias, Quick Lunch Counters, etc. our experience covering many of the largest installa-  
tions in Australia for Messrs. G. J. Jones, Woodworths, Manton's etc.

**Urns, Tea Infusers, Multi Pots**

### Electric Griller and Toasters

### Electric Food Trolleys

## KITCHEN PLANNING

The efficiency of a kitchen and the conservation of space by using the minimum of floor area, are dependent upon effective planning. Our long experience and the knowledge of the various factors involved, enable us to give expert advice in this regard.



### Electric Fish Fryer

# Wunderlich Limited

Manufacturers of

## METAL KITCHEN UNITS

Showrooms and Offices:

SYDNEY: Baptist Street, Redfern.  
 5TH. MELBOURNE: 210 Hanna Street.  
 ADELAIDE: Grote and Morphett Streets.  
 PERTH ASSOCIATES: H. L. Brisbane &  
 Wunderlich Ltd., Lord and Short Sts.

Showrooms and Offices:

BRISBANE: 138-140 Brunswick Street, Valley.  
 NEWCASTLE: King Street (near Auckland  
 Street).  
 HOBART: T. & G. Building,  
 Collins and Murray Streets.  
 LAUNCESTON: 127 Cluniers Street.



Stainless Steel Sink and Drainer  
 Furniture Steel, Stoved Synthetic Enamel Cabinet

### THE WUNDERLICH KITCHEN UNIT

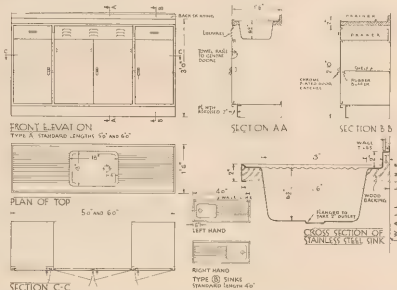
SINK — DRAINER — CABINET

The unit is made in standard sizes, 4 ft., 5 ft., and 6 ft. long, 1 ft. 6 in. wide and 3 ft. high.

The stainless steel sink and drainer features a bowl 18 in. x 13 in. x 6½ in. deep, is sturdily fabricated, the drainer timber backed to ensure rigidity and deaden sound.

The cabinet, of furniture steel, is available in three glossy colours WHITE, CREAM or GREEN, stoved synthetic enamel. Fitted with drawers, the unit also provides roomy cupboard space equipped with shelf and towel rack. Door pulls and door catches are chromium plated.

Installation is simple—the unit is supplied ready for placing in position.



# A. E. ATHERTON & SONS PTY. LTD.

383 LATROBE STREET, MELBOURNE, VICTORIA.

MANUFACTURERS OF "ATHENA" KITCHEN, CAFETERIA, & HOSPITAL EQUIPMENT.

## KITCHEN AND CAFETERIA EQUIPMENT

### PRODUCTS

Bain Maries, Hot Presses, Teapot Heaters, Coffee, Milk and Hot Water Urns, Stock Pots (tilting and stationary types), Jet Pots, Milk Coolers, Butter Coolers, Ice Pans, Coffee Percolators, Pie Heaters, Tray Racks, Dish Washers, Sinks, Hoods, Food Conveyors.

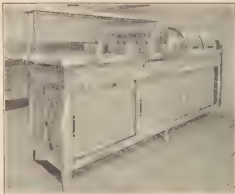
**BAIN MARIES**—Manufactured of stainless steel or similar metal, can be obtained in any size, with or without hot press under, and with ball-bearing, sliding doors. The top has a number of vessels for keeping food, etc., warm, sunk into a heavily tinned trough of boiling water. This water is heated with a steam coil, gas, or electric element.

**HOT PRESSES**—Manufactured of stainless steel or similar metal, in any desired size, with ball bearing, sliding doors, perforated shelves, steam coils on bottom and under top, thus keeping table warm; gas or electric elements can be used in place of the steam coil.

### SERVICE AND FACILITIES

An experience extending over 50 years in installing and maintaining kitchen and cafeteria equipment enables us to design and suggest layouts and methods where maintenance costs can be brought down to a minimum.

We are desirous of assisting architects by supplying all the information on the subject which they desire, and which it is necessary for them to have for efficient planning during the very early stages of the building project.



Hot Press and Bain Marie with Stainless Steel Vegetable and Soup Pots, Meat Carving Wells with telescopic covers, and complete with Serving Shelf and Tray Rail.  
Note neat access door to control valve cabinet.

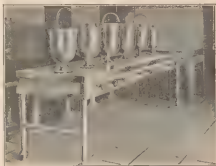
### COFFEE, MILK AND HOT WATER URNS.

Usually cylindrical in shape, or in fancy design, if so desired. Sizes to suit any number of gallons. Temperature raised by steam coil, gas or electric element. Obtainable in stainless steel or similar metal, or copper, nickel-plated, with one or more urn cocks.

Are available in single units, pairs, or batteries of three. These urns may be mounted on heavy pipe stands or warming cupboard boards.



Steam-jacketed Trunnion Kettle. Mounted on a cast-iron trunnion or wall bracket, and fitted with lever for tilting.



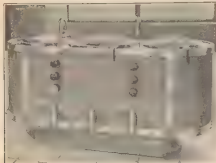
### KITCHEN EQUIPMENT AT THE PRINCE HENRY HOSPITAL, MELBOURNE.

(Architects, Office of Leighton Irwin.)

(Above)—Battery of Jet Pots with detachable bases carried on Stainless Steel Table.  
Note neat construction of stainless steel pots free from rivets and soldering.

(At left)—Battery of Three Stainless Steel Stock Pots carried on pedestal encased with enameled steel surrounds trimmed with stainless steel. Lids are counterbalanced hinged type.

Note toe-room provided by recessed base.



## "ATHENA" CONTINUOUS TYPE DISHWASHER—Compact, Rugged, Simple, Capable

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- [At right] Interior view.
- (1) Automatic rinse control lever.
  - (2) Canvas curtains.
  - (3) Automatic rinse nozzles.
  - (4) Wash spray tube (bottom).
  - (5) Brass angle tray slides.
  - (6) Scrap trays water strainers.

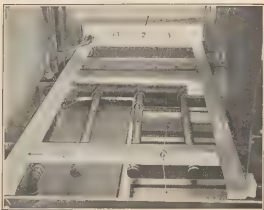
## DESCRIPTION

The same motor pump so successfully used in the "ATHENA" automatic rack type machine provides washing spray that is more than sufficient to scour away the most stubborn material. Waste far too hot to use in hand dishwashing sterilises and rinses table

ware so that it dries with a gleaming spotless brightness. The "ATHENA" comprises two type machine has a battery of 4 washing tubes that thoroughly deluge tableware under heavy pressure. Six automatic fresh rinse nozzles operated by pump jets, thus assuring that all tableware is properly rinsed and sterilized.

## SPECIFICATION.

Number of tanks, 1. Total tank capacity, 20 gals. Number of wash spray jets, 4. Number of final rinse nozzles, 6. Length (between tables), 42 in. Width (at table height), 27 in. Height, 84 in. Constructed of copper, Monel Metal or stainless steel. Motor, 1 h.p. Net weight, approx 553 lb.



## "ATHENA" CONVEYOR TYPE DISHWASHER

The "ATHENA" Conveyor Type Dishwasher is specially designed for a very large capacity of between 1,000 to 1,500 persons per meal, and it washes, rinses and sterilises all the china, glassware, silverware and cutlery with amazing speed and utmost safety. It is a complete automatic unit.

**PRINCIPLE.** The "ATHENA" Conveyor Type Dishwashers operate on one of the simplest, most efficient and economical principles yet discovered for mechanical dishwashing—the continuous, straight away cushioned conveyor. Tableware is placed directly upon this conveyor eliminating unnecessary handling, waste of time, and labour, and the liability of chipping and breakage which handling always entails.

**CONSTRUCTION.**—Tanks and tanks are constructed of 22 oz hard rolled copper or 2 gauge stainless steel or Monel metal. The piping and fittings are of solid brass and the framework is constructed of steel. The pump, motor and gear box are mounted on heavy cast iron unit bases, insuring permanent alignment. The shafts connected with the driving mechanism are of selected stainless steel run in ball bearings, encased in moisture-proof housings. The endless conveyor belt is of solid brass links with stainless steel rods, padded with waterproof shock-absorbing fibre for protection against breakage, marking or chipping the finest china.

**OPERATION.**—The "ATHENA" is a automatic with its operation always under control of the operator at the "Clean Dish End." Tableware placed on the moving conveyor passes between three series of sprays through which hundreds of gallons of water are forced at high pressure, so that each article is deluged with water on all sides. The first series of sprays delivers a warm washing action for removing debris from the tableware, the second delivers clear hot water for rinsing and the third series for holding water and steam for sterilising.

Each of the first two sprays is pumped from a separate tank, carried through a separate pipe line and pump compartment, finally returning to its original tank for further circulation. A fine mesh wire trap removes from the water any particles (except the very small) washed from the tableware. Smaller particles are collected on a larro, type filter placed within each tank at the pump intake. Trays and filters are both readily accessible for removal and cleaning.

A simple and effective circulating device delivers to each of the two tanks a flow of fresh water (taken from beneath the sterilising spray) sufficient to insure a maximum of cleanliness without waste of cleaning compound. Grease or other floating matter is run off into the sewer through a stand pipe, with which each tank is equipped.

**CONTROL.** Control is effected by means of a foot treadle at the clean dish end of the machines. This treadle actuates a sliding jaw which, mounted on the intermediate ball bearing drive shaft, the drive shaft being operated by a reduction gear mounted in line with the motor and pump. The foot treadle thus controls the operation of the conveyor and also the sterilising sprays, thereby eliminating waste of hot water.



The "ATHENA" Conveyor Type Dish Washer—installed at St. Vincent's Hospital, Melbourne.  
(Architects, Stephenson & Meldrum)

## "ATHENA" HOSPITAL STERILIZING EQUIPMENT

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## STERILIZERS

"Athena" Sterilizers cover a full range of sizes and types necessary for a modern hospital. The boiling water Sterilizers are made in the following sizes:—

Large Utensil, 24 in. x 20 in. x 19 in.; Intermediate Utensil and Instrument, 22 in. x 13 in. x 14 in.; Small Instrument, 20 in. x 12 in. x 10 in.

From experience, the large utensil and intermediate sizes cover the requirements of all hospital sterilizing, including Bed Pan Sterilizers, usually sterilized in the 24 in. x 20 in. x 19 in. All sizes are made with removable tray that automatically raises with the lid, operated by mechanical foot operated pedal levers, complete with oil cushion to prevent slamming when lowered, or with loose tray.

"Athena" Sterilizers are suitable for heating either by

steam, electricity and gas, and in remote areas, petrol or kerosene burners.

The Sterilizers can be fitted with ventostat to automatically maintain boiling, with the minimum consumption of steam, electricity or gas.

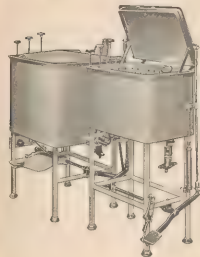
The Electric and Gas Sterilizers can also be fitted with low water controls to protect the heating element and Sterilizer.

The illustrations below show ventostat attached to the back of a steam heated 24 in. x 20 in. x 19 in. Utensil Sterilizer, also a 22 in. x 14 in. x 13 in. Intermediate Sterilizer, with lid in the raised position. The foot pedal and linkage can be seen in the open position, with tray at top.

## Oil Cushion Instrument Sterilizer

Is absolutely protected against water pollution by the sterilizer. Made of bronze, brass and copper, N.P., and mounted on a white enamelled pipe stand, and provided with a mechanical pedal lift for operating cover. An oil check prevents slamming of cover. It has a large drain covered with a removable screen, and is fitted with one full-length and two half-length trays. Steam coil and all necessary special heavy duty valves for hand control of water supply, waste and steam are installed complete.

Finish. Exterior highly polished nickel; interior dull plated. Stand is white enamelled, or other colour, if desired.



## Utensil Sterilizer



Utensil Sterilizer

Sterilizer is used for bowls, trays, etc. The lid and tray are raised by foot mechanical operation and fitted with oil check to prevent slamming of lid. Heating is by steam, gas, or electricity. Illustration shows gas-heated type with all the latest safety and automatic controls, viz., no gas pressure cut-off valve, water failure gas control valve so fitted that the water must be turned on before gas is supplied to burner; electric ignition, which automatically lights burner as gas is turned on, constant level water supply to assure water in sterilizer whilst burner is on also prevents over-filling. Vent-O-Slat which automatically controls the gas burner seating the sterilizer and eliminates vent pipes. A jacket insulated with asbestos is fitted around body of sterilizer.

"Athena" Bed Pan Washer and Sterilizer, manufactured in either concealed or exposed types, fitted with automatic adjusting claw to grip standard bed pan or urine bottle, or with fixed support for bed pan and pegs for two urine bottles. The Sterilizer is complete with "Sloan" flush valve and steam valve.



The illustration at right shows an "Athena" Bed Pan Sterilizer in position—complete with flush valve and steam control; the installation is at the St. Vincent's Hospital, Melbourne.

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## Auto Clave Sterilizer

This is a steam jacketed sterilizer made from bronze, brass and copper, mounted on tubular steel pipe stand. Vacuum and automatic air and condensation elimination ensures perfect steam penetration and quick drying.

The operation of the sterilizer is controlled by three valves only. All necessary gauges, safety valves, complete with steam roll heating equipment, with special heavy duty valve for hand control, are installed. One instrument tray is provided.

Provision is made for thermostatic valve, eliminating air and condensation.

## Sterimeter

Can be fitted to automatic to automatically time the correct sterilizing period. It indicates the total length of time that the temperature in the sterilizing chamber is set. The minimum temperature in the chamber is indicated by the thermometer in the sterimeter assembly. The extension bulb of the thermometer is placed in the exhaust line from the chamber. In the thermometer there is an electrical contact which automatically starts the timing clock when the thermometer indicates a temperature above that for which the contacts are set. The contacts are set at the factory to operate at 125 deg. F. The timer starts to run only when this temperature is indicated by the thermometer, and runs only as long as the indi-

Exposed parts of built-in sterilizer are highly polished nickel. Sides of the convoluted body are covered with air-roll asbestos held in place by treated canvas. Exposed types finished with coating of polished hard rolled aluminium.

## Milk Bottle Sterilizers

Made of bronze, brass and copper, mounted on white enamelled pipe stand. Mechanically foot-operated lift for cover only with oil check to prevent slamming of cover.

One complete set of bottle racks, complete heating equipment, and all necessary special duty type valves for hand control of water drain and steam supply.

Larger sizes have cabinets underneath for bottle storage. Water filling pipe is above level of overflow, thus meeting the most exacting codes.

Finish.—Exterior highly polished nickel; interior heavily tinned. The bases of the two larger sizes and all pedal mechanism are finished with hard baked enamel, or other colour if desired.

## Installation of Sterilizers

The local conditions vary to such an extent that each case should be treated individually. We therefore suggest that a full statement of these conditions, with floor plans of the building when possible, or a layout of Sterilizing Rooms, be sent to our Engineering Department, and let us make a recommendation covering an economical and efficient installation of sterilizing equipment.

## Blanket and Bed Pan Warmers and Solution Cabinets

Cabinets are made from rust-proof terrace plate and are lined with asbestos board for heat insulation. Doors are hung on ball-bearing hinges and are equipped with eccentric or bar-locks to ensure tight closing of door, which renders the cabinet dust proof. Complete heating equipment is located so as to provide for uniform distribution of heat. If electrically heated, blanket and bed pan warmers will be controlled by thermostatic regulation of temperature.

Solution warmers and solution compartments of warmers are controlled by an accurate thermostatic device which automatically regulates the temperature.

## Trays

We have a wide selection of tray racks, dish racks, utensil racks and linen racks, all of which are constructed of Monel metal or stainless steel, and mounted on special hospital rubber-tired wheels.

## Food Waggon

Food waggons manufactured from stainless steel or similar metals and baked enamel sheet steel are available. They are thoroughly insulated and fitted with electric heating elements. Waggons are provided with drop doors which can be used as a table for dishes, etc. when emptying or refilling.

All waggons are mounted on specially constructed hospital type swivel spring socket ball-bearing tyrod wheels which make them very light to handle, and fitted with stainless steel bulk heads. Lateral and medial doors.

## Sinks

Sinks of stainless steel, or similar metal are available. These have a glass-smooth surface that resists the attacks of food and fruit acids—a surface that can be kept bright and clean with ordinary care. They are rust-proof and chip-proof with a steel-like strength and toughness.

Some features of metal sinks —

- (1) Rust-proof, highly resistant to corrosion and strong as steel.
- (2) Solid metal clear through, with no coating to chip, crack or wear off.
- (3) Obtainable in any size or shape.
- (4) Less weight, saves labour expense in installing.



ated temperature is above that point. If for any reason the temperature drops below 125 deg. during the sterilizing period, the timer stops until the temperature rises above that point again.

Finish.—Exterior of exposed sterilizer is highly polished nickel, interior is heavily tinned. Exposed stands are white enamelled or finished in other colours if desired.

# ARCHER SUPPLY CO.

IMPORTERS AND MANUFACTURERS' AGENTS

767 MT. ALEXANDER ROAD, MOONEE PONDS, VICTORIA

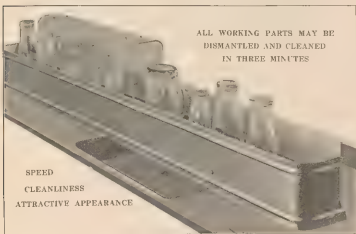
Telephone: FU5120

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4

## "STERILGLASS"

*The Proven Automatic Drinking Glass Washer*



ALL WORKING PARTS MAY BE  
DISMANTLED AND CLEANED  
IN THREE MINUTES

SPEED  
CLEANLINESS  
ATTRACTIVE APPEARANCE

### APPLICATION

The "Sterilglass" automatically washes, cleans and sterilises all drinking glasses, beer, soda, lemonade, etc. It is obtainable in Chromium Plate or Stainless Steel and is equally suitable for installation in

HOTELS, MILK BARS, CAFES, CLUBS, BOOTHS,

and all other drink stalls, etc., where a large quantity of clean drinking vessels is constantly required.

The machine is designed in keeping with modern Cafe and Hotel equipment.

### OPERATION FOR HOTELS

The glasses to be washed are placed in an inverted position on the conveyor belt which carries the glasses over a series of water jets, through which hot water, heated electrically and thermostatically controlled by the machine, is first sprayed over inside and outside surfaces of the glass, thus ensuring that the total area is thoroughly cleaned.

On passing a little further through the machine the glasses are sprayed with cold water, which acts as a rinse and, at the same time, cools the glasses, making them ready for immediate use.

From the health point of view, one of the most important factors in the operation of the "Sterilglass" glass washing machine is that every glass is sprayed with both hot and cold fresh water, there being a continuous flow of clean water from the jets and then out through a waste outlet. At no time are glasses, etc., in contact with water which has previously been used on any other glass.

### OPERATION FOR MILK BARS, ETC.

The machine is made larger to take metal mixing containers, etc., for glasses, etc. The first three are fitted with brushes to ensure the glass or container is thoroughly cleaned of all milk or sugar residue, then thoroughly sprayed with hot water, finally a cold water rinse—making the glasses, etc., available for immediate use.

### CLEANING OF MACHINE

A salient point in both machines is that the hood and conveyor belt can be lifted off, thoroughly cleaned, and body of machine (drum) cleaned out in a matter of three minutes. This is absolutely necessary to eliminate the danger (these pieces) of milk and cream residue. A salient point of "Sterilglass" is that the conveyor belts are thoroughly cleaned with every revolution.

### INSTALLATION AND SERVICE

"Sterilglass" is installed free of charge and a certificate is guaranteed for six months. Any electrical or plumbing alterations necessary are the obligation of the user.

The machine can be fitted to the squared edge of the counter top by screwing through a flange provided. Island sink installation is of great benefit, the machine can be arranged to push glasses down on to draining tray automatically, where they are drained and ready for immediate use.

### DIMENSIONS ARE

Model M.L. Length 4 ft. 6 in. Width 24 in. Depth 21 in.  
Milk Machine Length 4 ft. 6 in. Width 24 in. Depth 21 in.

Approved by Melbourne and Metropolitan Board of Works and State Electricity Commission.

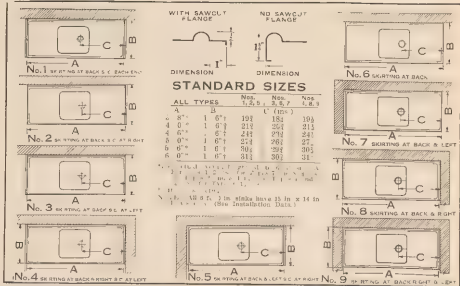
We would be glad to arrange for the inspection of a "Sterilglass" machine under normal working conditions.

**"STERILGLASS" SAVES LABOUR, ENSURES CLEANLINESS**

## FABRICATION



## STANDARD TYPES & SIZES



113 YORK STREET, STH. MELBOURNE

**SHEET No. 1**

**SHEET No. 1** TELEPHONE: MX 1183; MX 4774





SECTION

**46**

SECTION

**MISCELLANEOUS  
EQUIPMENT**

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CATALOGUES 1 to 3

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# A.R.C. ENGINEERING COMPANY PTY. LTD.

Head Office: NORMANBY CHAMBERS, 430 LITTLE COLLINS STREET, MELBOURNE

Sydney Office: 14 SPRING STREET, SYDNEY

Works: SUNSHINE, VICTORIA, AND STRATHFIELD, N.S.W.

Agents:-

BRISBANE, ADELAIDE, PERTH, HOBART  
NEW ZEALAND

46

I

## B.R.G. ROLSCREENS

### Advantages

Installed on the inside.

Inside screening has many advantages. B.R.G. Rolcreens installed on the inside protect the draperies the year round from sooty and grimy sills.

### Inconspicuous

They are practically concealed. The special rust-resisting "Alumina" cloth allows a clear vision. They do not detract from the beauty of the windows, having been designed to conform to all types of frames.

### Permanent

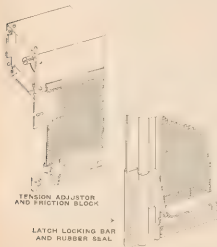
They are constructed to take any amount of constant use and are always ready for their screening duties.

### Materials

Metal. B.R.G. Rolcreens are constructed of zincanneal and lead-coated terne sheet metal.

### Wire Cloth

The screen cloth is 14 mesh rust-resisting with reinforced triple selvedge. It is specially woven and processed for B.R.G. Rolcreens and "Alumina" coated to a clean grey colour which is almost invisible.



### Housing

The housing is electrically welded; recessed ends reinforce it and make it rigid.

Sizes—Opening up to 48 in. high, 2½ in. square  
Opening 48 in. to 84 in. high, 2½ in. square  
Opening over 84 in. high, 2½ in. square

### Roller Assembly

A special feature of B.R.G. Rolcreens is the floating roller. This construction permits an even flowing of the screen cloth through the mouth of the housing. Motive power is by steel spring roller.

### Fasteners

When lowered, B.R.G. Rolcreens are automatically locked on the window sill by spring catches which are unlocked only from inside. The construction of the catches is such that they ensure complete control when operating the screen.

### Friction Angles

Friction angles are used in many types of installations. Attached to the jambs of the frames they frictionally hold the screen guides.



### Guides

The guides permit free running of the gauze as the screen is rolled down or drawn up. Blocks on the ends of the locking bars are frictionally engaged in the guides. This construction regulates the action of the screen. Laps at the upper ends of the guides, co-acting with the housing, assure accurate installation.



### Plaster Channels

Where desired, plaster channels may be used.

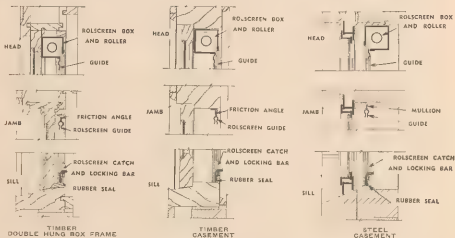
### Metal Mullions

Mullions of both standard and special types can be used on all types of steel frame installations.



RAMSAY & CATALOGUE

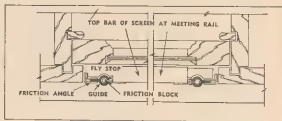
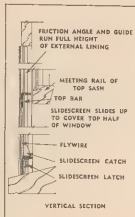
## INSTALLATIONS



The above illustrations are three typical applications.

Details of special installations will be furnished on request.

## B.R.G. SLIDE SCREENS



B.R.G. Slidescreens are constructed of the same materials as B.R.G. Roloscreens. Installed externally, they are operated from the inside by releasing the automatic latches and simply sliding up or down as required.

# KERNERATOR

INCINERATION

MANDIBLE STREET, ALEXANDRIA — TELEPHONE MX 1506

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2

Queensland Rep:  
James Campbell & Sons  
Pty. Ltd.,  
Creek Street, Brisbane.

Victorian Rep:  
Earle, Griffiths & Co.,  
Invicta House,  
232 Filanders Lane, Melbourne.

W.A. Rep:  
Builders Limited,  
Southern Cross Chambers,  
7 Howard Street, Perth.

S.A. Rep:  
E. T. Bridgland Ltd.,  
13 Pitt Street,  
Adelaide.

IT MUST BE A KERNERATOR

## How the KERNERATOR Operates

Into the hopper doors is put all waste of every kind, all garbage, broken bottles, tin cans, cardboard boxes, wilted flowers, sweepings, magazines, newspapers—in fact, all of the things that are no longer wanted and which, unless disposed of at once, continuously fight against clean, sanitary conditions.

This waste falls down the flue to the incinerator in the basement, where it spreads out on the grates into a more or less separated and loose pile, permitting the constant flow of air up the by-pass flue to circulate through and around this moist material, thus causing a surprising amount of evaporation between burnings.



Showing KERNERATOR Combustion Chamber and two methods of placing hopper doors on floors above. One in apartment kitchen, the other in corridor services closet.

Sectional view showing interior construction and operation of the Company's KERNERATOR. Note the draft reaching point of burning through by-pass grate. The fire is always on top of the burning material, consuming offensive odours.

# KERNERATOR

INCINERATION

—(Continued on next page)

—RANNEY & CATALAN

# KERNERATOR

INCINERATION

A PRODUCT OF THE LARGEST INCINERATOR COMPANY IN THE WORLD—HAVING ACHIEVED THIS POSITION THROUGH A PRODUCT OF ACKNOWLEDGED EXCELLENCE. THIRTY-FIVE YEARS OF UNREMITTING INTENSIVE RESEARCH HAS MADE THE KERNERATOR THE LOGICAL CHOICE OF ARCHITECTS THE WORLD OVER.



General view of a Kernerator as installed in the average home—a feature highly prized by every housewife.



## For the Home

The KERNERATOR Chimney-fed incinerator provides a convenient, sanitary, safe and efficient solution of the problem of garbage and waste disposal. It destroys, by burning, all garbage and waste in the home where it is created and without the use of gas or other commercial fuel. The rubbish burns the garbage.

The KERNERATOR eliminates forever the unsightly, insanitary and inconvenient garbage cans and rubbish piles, and the disagreeable features of garbage and rubbish collections. It lightens the work of the household by saving the constant trips to these out-of-date nuisances. It means clean yards, neat back porches and basements. It contributes very largely to the cleanliness of the home and the living comfort of its occupants. It is a built-in convenience that should be provided for in every type of modern home.

## Built on the Outside of Residences Without Basement

Ordinarily, where there is a basement in the residence, the KERNERATOR is located in the basement, but where there is no basement, it is a simple matter to place the incinerator against the outside of the building, with the hopper door located inside the building, in or near the kitchen. An installation of this kind is shown below.

## Before Building—

### Co-operation with the Architect and Builder

KERNERATOR service begins with the investigation of each waste disposal problem and the recommendation of adequate equipment for the sanitary incineration of waste. Savings on incineration begin with the building plan, by properly locating the incinerator often a difficult technical problem.

KERNERATOR salesmen-engineers are trained to locate the incinerator on the plans for the greatest economy to the builder and the greatest convenience for the occupants of the building.

## After Completion

KERNERATOR service attends to the initial burnings, instructing employees in the proper use of equipment, tacking up direction cards, distributing instruction booklet. The service also carries with it a periodical inspection as to satisfactory operation; a readiness to respond to calls for professional assistance, due to unforeseen circumstances.

## During Construction

The satisfactory operation of the KERNERATOR is dependent, not only upon original design, but upon proper construction in all details, from foundation to chimney screen.

KERNERATOR construction details are simple and easy to follow. Mason, carpenter and lather are warned by special tags where there is a possibility of making a mistake. A KERNERATOR representative is on the job during all phases of construction, co-operating with architect and superintendent to secure a satisfactory installation.

**KERNERATOR**  
INCINERATION



# LATEX PRODUCTS PTY. LTD.

(Incorporated in Victoria)

DIVISION OF DUNLOP RUBBER AUSTRALIA LTD.

THE CRESCENT, ANNANDALE, N.S.W.

Telephone: MW2641

ADELAIDE

MELBOURNE

BRISBANE

46

3

## DUNLOPILLO LATEX FOAM CUSHIONING

"DUNLOPILLO" Cushioning is made of the milk-like juice of the rubber tree—Latex—beaten up into a froth by a whisk. The fothing process introduces innumerable air bubbles into the Latex, so that the finished products are honeycombed with interconnected air cells.

Artificial ageing tests carried out by our laboratories showed that, protected by a covering, "DUNLOPILLO" Cushioning will not perish.



"DUNLOPILLO" Cushioning is entirely free from dust and has antiseptic properties. Its honeycomb structure of air cells allows the material to breathe with every pressure, so continuous ventilation is assured.

Before the adoption of "DUNLOPILLO" Cushioning by N.S.W. Tramways, a 4 in. cushion was pounded 650,000 times with a 140 lb. weight in their own workshops. The depression in the cushion after this test (equal to 15 years' service) was hardly appreciable.

"DUNLOPILLO" Cushioning is suitable for use wherever padding or upholstery is required. It is obtainable in standard thicknesses of 1 in., 2/16 in., 3/16 in., 1/2 in., 3/4 in., 1 in., 1 1/4 in., 1 1/2 in., 2 in., 3 in., 4 in., 5 in., 6 in., 8 in., 10 in., 12 in., 14 in., 16 in., 18 in., 20 in., 22 in., 24 in., 26 in., 28 in., 30 in., 32 in., 34 in., 36 in., 38 in., 40 in., 42 in., 44 in., 46 in., 48 in., 50 in., 52 in., 54 in., 56 in., 58 in., 60 in., 62 in., 64 in., 66 in., 68 in., 70 in., 72 in., 74 in., 76 in., 78 in., 80 in., 82 in., 84 in., 86 in., 88 in., 90 in., 92 in., 94 in., 96 in., 98 in., 100 in. or cut to size. The type used for

### THICKNESSES, SIZES AND SHAPES

Mattresses, Asove Seats, Occasional Chairs, etc., is 2 in. or 4 in. cellular. This is made with a solid topping and the underside is of open cell construction, so that the complete article is non-reversible. These thicknesses are available to any size or shape. For

Motor Car Cushions, Lounge Suites, Office Cushions, and miscellaneous uses, the units are especially designed to meet requirements, and information can be obtained from our showroom in this regard.

### MAJOR USES OF "DUNLOPILLO" CUSHIONING

#### Theatres

"DUNLOPILLO" cushioned Theatre Chairs are manufactured and completely installed throughout Australia by Latex Products Pty. Ltd. Installations have been carried out in the majority of theatres in Australia, and entire satisfaction has been expressed by theatre owners as to the manner in which the chairs have remained resilient over a number of years. The durability, hygiene and sound absorption qualities of the Cushioning are points which are of considerable importance to theatre owners. Any information regarding seating generally, such as types and spacing of chairs, will be supplied on request.

#### Lounge Suites and Specially Designed Seaters

"DUNLOPILLO" cushioned Lounge Suites and Seaters to design have

been supplied for Theatre Foyers, Houses, Hospitals, and Institutions. The cushioning is obtainable to fit to any design, as apart from moulded cushions to standard size, it may be hand-fashioned to any measurements. The loose reversible cushion adopted for Suites has been in use in all parts of Australia for some years and has proved its outstanding comfort and suitability for all climates.

#### Mattresses

Hospitals throughout Australia have proved the economy of purchasing "DUNLOPILLO" Mattresses. The features which prove this economy are

Comfort with perfect support throughout the body.

Hygiene, as the mattress is completely porous and allows fresh air to circulate freely, and the mattress repelling germs, moths, and vermin.

Durability, the mattress has a practically ever-lasting life. Sterilisation can be successfully accomplished without damage to the mattress. Information is available on request.

Labour is saved by the mattress being non-reversible and by its assistance in preventing bed sores. Climatic conditions do not affect the mattress, and practical experience has shown that satisfaction is obtained in all States of Australia and the Islands, the climatic conditions varying considerably.

The use of mattresses is not confined to hospitals, and is evident in many homes, Institutions and Railways in Australia.

Medical authorities are insistent on the use of the mattresses and pillows in cases such as Asthma, Hay Fever and the like, as the Cushioning is entirely free from dust.

Mattresses are made in any size and are 4 ins. in thickness.

—(Continued on next page)

RANNEY'S CATALOGUE

**"DUNLOPILLO"**

CUSHIONING

CUTS OUT

FATIGUE



Passenger movement with spring-filled seat



Passenger movement with Dunlopil Cushioned seat.

ABSORBS ROAD

SHOCKS

ELIMINATES

"THROW &amp; BOUNCE"

Eliminates "Throw" and "Bounce"—You can travel for hours on "DUNLOPILLO" Cushioning, yet feel fresh and relaxed at the end of the trip. The secret of the luxurious comfort of "DUNLOPILLO" Cushioning lies in the gentle uniform support it gives the body. By moulding itself to the exact shape, and by providing support over the greatest possible area, this material achieves the ideal degree of comfort. You do not necessarily notice this when you first sit on a "DUNLOPILLO" Seat—though you probably will—but drive or ride for two or three hours on it and your freshness will make you realise that a death blow has been effectively dealt to travel's greatest enemy—fatigue.

**Cushioning Bumpy Roads.**—The coiled steel springs in an ordinary car, bus or truck seat react violently to sudden compression. Result—"throw" and "bounce." But when you ride on "DUNLOPILLO" Cushioning, you find to your surprise that this has completely disappeared. Independent tests have, in fact, proved conclusively that "DUNLOPILLO" Cushioning has a higher shock-absorbing capacity than any other form of cushioning.

On bumpy roads you notice the phenomenal difference. In the high-speed driving of today, the new stability you experience is an important safety factor.

**No Heat — Perfect Ventilation.** — "DUNLOPILLO" Cushioning has millions of tiny cells each opening into others right through to the surface which, having no air-tight skin, opens into the atmosphere. Consequently, every time pressure is applied and released every time a person moves

on it—fresh air is circulated in and out. This is why the material is always perfectly ventilated.

**Keeps in Shape.**—You never have a hump or a hollow in "DUNLOPILLO" Cushioning. Immediately it is released from weight, it springs back to its normal position and its permanent liveliness ensures that it will go on doing this throughout its life. As it cannot be punctured and is unaffected by climatic conditions, "DUNLOPILLO" Cushioning may be regarded as practically indestructible.

**Light Weight.** "DUNLOPILLO" Cushioning is lighter than any other common form of seating. In public service vehicles this saving in weight often means that extra passengers can be carried.

**Trimming Costs Reduced.**—Each "DUNLOPILLO" seat, back unit, or arm-rest is a complete one-piece moulded unit. It simply requires a covering when fitted.

**No Torn Clothing Claims** in public service vehicles because with "DUNLOPILLO" Cushioning there are no springs to get out of order and tear the clothing.

Do not confuse "DUNLOPILLO" Cushioning with Sponge Rubber.

Ordinary sponge rubber is produced from solid dried rubber by a process which involves mechanical kneading on powerful rollers. It also gives a surface skin through which air cannot pass, with the result that it gets hot and retains its moisture.

"DUNLOPILLO" Cushioning on the other hand is "whipped up" from latex. The cellular construction and complete porosity, is the result of air bubbles being whipped into the liquid latex and a possible only with this process.

**MAJOR USES OF "DUNLOPILLO" CUSHIONING—continued****Carpet Underlay.**

"DUNLOPILLO" Cushioning in 3/16 in. or 1/4 in. thickness is the most modern form of underlay. Due to its continuous resiliency, it adds considerably to the life of any carpet, as it provides a permanent cushioning between the floor and the carpet. This applies to either wooden or concrete floors.

It is soft and luxurious underfoot, and at the same time is economical in its saving of carpet replacement. The wear experienced on stairway carpets can be relieved by laying this Underlay. Moths and silverfish will not damage the Underlay.

**Railways.**

Since the introduction of "DUNLOPILLO" Cushioning to Australia, the Railway Departments of the various States have incorporated the product in mattresses, seating, arm-rests, cheek-rests, back-rests and underlay.

Transport authorities have realised that for comfort, for long-distance travel or heavy duty, the Cushioning is unsurpassed.

Any shape or dimension for a special use will be manufactured.

**Omnibuses.**

A specially designed unit is supplied for omnibuses used throughout Australia, and it has been successfully used in all States over a number of years. The application usually adopted is to place the "DUNLOPILLO" cushion directly on to a frame and for the cover to be pulled over.

**Motor Car and Truck Seats.**

"DUNLOPILLO" units are available for any size or shaped seat and are usually of 4 in. thickness. The Cushioning provides a comfort which continues irrespective of the length of the journey and eliminates jolting.

**Churches.**

For the seating of pews or as kneeling pads, the Cushioning is particularly suited. The 2 in. or 4 in. cellular thickness is recommended for seating and for kneeling cushions the 1 in. or 1 1/2 in. thickness is preferred. Any size is available and a suitable covering material may be attached.

**Miscellaneous.**

A few of the incidental lines available are Minors' Knee and Elbow Pads, Shoulder Pads for Suits, Household Kneeling Pads, Alcore Seats, Fishing Cushions, etc.

**Office Cushions.**

"DUNLOPILLO" Cushions are manufactured in various sizes and shapes to suit your office chair. These are available with or without covers.

**Machinery.**

To assist in the elimination of vibration in certain machinery, the use of "DUNLOPILLO" sheet as a cushioning has been adopted.



# INDEX to TRADE NAMES, TRADE MARKS and BRANDS

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TRADE NAMES, MARKS and BRANDS **7** = Section No.  
are INDEXED BY SECTION and  
CATALOGUE NUMBERS THUS: **1** = Catalogue No.

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# INDEX to TRADE NAMES TRADE MARKS and BRANDS

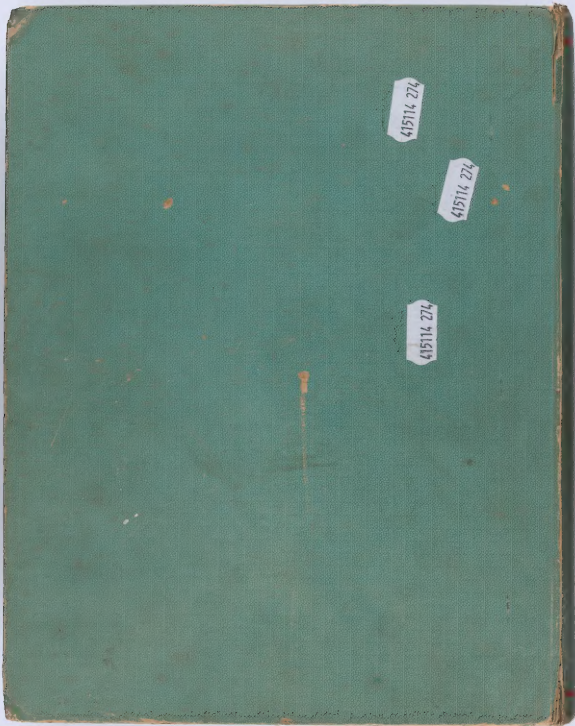
(Paints shown by †)

Acet . . . . .	27/10	Brizolt . . . . .	27/6	Duratex . . . . .	23/2	Glitterlite . . . . .	26/1
Accelacrete . . . . .	19/7	Brownbult . . . . .	44/2	Duratile . . . . .	23/2	Golden Ray . . . . .	26/1
Adelet . . . . .	38/2	Buffalo . . . . .	35/2	Duraveneer . . . . .	23/2	Goodlase† . . . . .	27/3
A.G.E. . . . .	38/4	Carbulex . . . . .	37A/1	Dussealt† . . . . .	27/2	Grinnell . . . . .	31/1
Airlite . . . . .	10/7	Calcimo† . . . . .	27/1a	Dux† . . . . .	27/1	Guardian† . . . . .	27/6
Alutite . . . . .	37A/1	Carlton . . . . .	34/4	Dynacard . . . . .	40/4	Guinea . . . . .	12/1
All Red . . . . .	35/6	Carrara . . . . .	26/1	Dynastand . . . . .	40/4	Gunnerson . . . . .	21/1a
Alpaste . . . . .	27/4	Carrier . . . . .	35/1	Engle . . . . .	1/6	G.W.† . . . . .	27/3
Alterrazzo . . . . .	10/7	Cellconcrete . . . . .	22/2	Ebonolt† . . . . .	27/12	Graphipax . . . . .	22/5
Amoldite† . . . . .	27/3	Cem-Sealt† . . . . .	27/1	Ekmer . . . . .	21/1	Graviatoko . . . . .	34/1
Aquastop . . . . .	10/9	Cemuro† . . . . .	27/6	Elasticote . . . . .	11/1	Hemacote† . . . . .	27/2
Arboreum† . . . . .	27/2	Central . . . . .	31/2	Elephant† . . . . .	27/4	Hometime† . . . . .	27/12
Armerite† . . . . .	27/3	Cheks . . . . .	24/1	E.M.F. . . . .	15/4	Hornex . . . . .	11/4
Artex† . . . . .	25/10	Chrome Fractite . . . . .	37A/1	Emu . . . . .	28/2	Hotpoint . . . . .	33/2, 38/4, 39/1
Artona† . . . . .	27/9	Chuck . . . . .	16/2	Enamelact† . . . . .	27/2	Hume— (Pipes) . . . . .	39/1, 30/2
Aubeshote . . . . .	11/2	Cinderete . . . . .	9/2	Enamelastic† . . . . .	27/12	Ideal . . . . .	34/3
Athema . . . . .	34/2, 45/3	Claude . . . . .	38/3	Ev-a-dry† . . . . .	27/12	Insulabestos . . . . .	23/2
Atlantic . . . . .	36/1	Claudite . . . . .	17/2	Everhot . . . . .	33/4	Insulox . . . . .	37A/1
Austral— (Extruded Bronze) . . . . .	17/1	Combino† . . . . .	27/3	Excelsior . . . . .	28/2	Insulwool . . . . .	22/5
(Fencing) . . . . .	16/1	C.O.R. . . . .	36/1	Fanpen . . . . .	31/1	International† . . . . .	27/11
(Roller Shutter) . . . . .	18/1	Crane . . . . .	34/4	Fergalex† . . . . .	27/4	Invincible . . . . .	33/6
(Sheet Copper) . . . . .	12/2	Crittall . . . . .	19/7	Ferropaint . . . . .	1/4	Ironcote† . . . . .	27/10
Australcork . . . . .	22/1	Cyclone . . . . .	16/4	Fibrolite . . . . .	23/1	Isteg . . . . .	8/2
Australuco . . . . .	17/3	Dampax . . . . .	11/2	Fish-O-Lac† . . . . .	27/12	Johnsway . . . . .	42/2
A.W.A. . . . .	40/1	Danbolinet . . . . .	27/11	Flatkote† . . . . .	27/1	Kernerator . . . . .	46/2
B.A.L.M. . . . .	27/1	Diamond Grid . . . . .	15/1	Fleur-de-lis . . . . .	12/1	Kladrast† . . . . .	27/12
Bangor . . . . .	28/5	Densagel . . . . .	10/1	Flexitite . . . . .	10/7	K.L. . . . .	30/5
Barith . . . . .	33/1	Dinast . . . . .	37A/1	Flintkote . . . . .	10/6	K.M. . . . .	19/8
Barth . . . . .	15/3	Dowell . . . . .	19/2, 43/1	Floatine . . . . .	11/3	Lagoline† . . . . .	27/11
Barnett . . . . .	13/2	D.P.L. . . . .	15/3	F.O.B.† . . . . .	27/2	Lagomatt† . . . . .	27/11
B.L. Slagwood . . . . .	22/3	Dryvin . . . . .	28/3	Four Hour† . . . . .	27/12	Lastoicum . . . . .	11/2
Bitulynd . . . . .	30/3	Duco . . . . .	27/1	Fowler Ware . . . . .	29/2	Ledinel† . . . . .	27/3
Boncote† . . . . .	27/3	Dulux† . . . . .	27/1	Free's Shelf . . . . .	41/2	Lignoleo . . . . .	24/5
Bondex . . . . .	14/1	Dunlopillo . . . . .	46/3	Frescolinet . . . . .	27/3	Limil . . . . .	3/1
Boska . . . . .	33/6	Duperite . . . . .	38/6	Galvot† . . . . .	27/9	Limit Load . . . . .	35/2
B.P.† . . . . .	27/2	Durabeston . . . . .	23/2	Garnay— (Heaters) . . . . .	35/7	Limotol . . . . .	24/6
B.R.C. . . . .	8/1	Durable† . . . . .	27/12	(Equipment) . . . . .	45/1	Lion . . . . .	28/2
B.R.G. . . . .	46/1	Durabolt . . . . .	27/8	Gatic . . . . .	24/8	Loxia . . . . .	28/3
Brickrete . . . . .	9/2	Duracast . . . . .	23/2	Genaseo . . . . .	10/7	Lustral . . . . .	29/5
Britannia . . . . .	34/3	Durakote . . . . .	27/1	Givantake . . . . .	11/2	Lux . . . . .	31/1
		Durachrome . . . . .	23/2	Glidenway . . . . .	19/8		
		Duraseal . . . . .	11/2	Gldor . . . . .	28/5		

# INDEX to TRADE NAMES TRADE MARKS and BRANDS

(Paints shown by †)

Major . . . . . 34/2	Permoglas† . . . . . 27/6	Savox† . . . . . 27/12	Tensite . . . . . 11/2
Major† . . . . . 27/9	Pescarinet . . . . . 27/11	Scrub . . . . . 28/3	Text† . . . . . 27/2, 27/12
Malthoid . . . . . 11/3	Petramit† . . . . . 27/1	Sealapore† . . . . . 27/3	Thermotile . . . . . 14/1
Marshall . . . . . 25/1	Pioneer . . . . . 20/3	Sealroof . . . . . 11/1	Tilax . . . . . 25/1
Masonite . . . . . 21/3	Pitman's . . . . . 10/2	Seboe . . . . . 28/3	Timoniet . . . . . 27/2
Mastipave . . . . . 11/3	Plascoal† . . . . . 27/6	Sevac† . . . . . 27/12	Toilex . . . . . 29/4
Matonet . . . . . 27/2	Plastmold . . . . . 25/4	Shell . . . . . 36/1	Torpedo . . . . . 40/4
Mazda . . . . . 38/4	Plummer . . . . . 13/2	Siderosthen . . . . . 14/1	Trane . . . . . 35/2
Metalcote . . . . . 10/7	Plummer-Crete . . . . . 23a/1	Silencel . . . . . 22/4	Trevor . . . . . 18/3
Metalite . . . . . 25/1	Plymolt† . . . . . 27/9	Silex . . . . . 22/5	Trevor-Bross . . . . . 37/1
Micalox . . . . . 37A/1	Precipitron . . . . . 35/5	Silva . . . . . 45/5	Turquoise . . . . . 1/6
Mineralox . . . . . 37A/1	Presdwood . . . . . 21/3	Silvacote . . . . . 11/4	Unifil . . . . . 10/7
Mor-Air . . . . . 10/2	Primaall . . . . . 11/4	Silverglot 27/2, 27/10, 27/12	Unique . . . . . 28/4
Mullox . . . . . 37A/1	Primolt† . . . . . 27/10	Silverglot† . . . . . 27/12	Unilt† . . . . . 27/1
Multifyre . . . . . 31/1	Promura . . . . . 10/3	Silverseal . . . . . 11/1	Vacuum . . . . . 36/1
Mural† . . . . . 27/1a, 27/4	Quatboard . . . . . 21/3	Sisalcraft . . . . . 22/5	Velumra† . . . . . 27/6
Multiflex† . . . . . 27/6	Queen's Head . . . . . 12/1	Simplex— (Fire Extinguisher) 31/1	V.I.A. . . . . 21a/1
Mytton . . . . . 45/5	Quick† . . . . . 27/2, 27/10, 27/12	S-K . . . . . 22/6	Victor— (Boilers) . . . . . 33/6 (Plaster) . . . . . 25/1 (Decoration) . . . . . 27/7
Naco . . . . . 25/1	Radco . . . . . 34/1	Sollicote† . . . . . 27/6	Victor-Gypsum . . . . . 6/1
Neophone . . . . . 40/2	Red Orb . . . . . 12/1	Sollignum . . . . . 32/2	Victor (Lath) . . . . . 23/1
Neuchatel . . . . . 10/7	Refractite . . . . . 37A/1	S.S.S. . . . . 40/4	Victor (Wallboard) . . . . . 21/2
Nonporite . . . . . 10/5	Renderite . . . . . 10/5	Standard (Marbles) 4/2	Victortex . . . . . 25/1
Non-Sapon† . . . . . 27/6	Rennicks . . . . . 10/1	Standard (Telephones) 40/3	Vulcatex . . . . . 11/4
North British . . . . . 24/1	Renowa . . . . . 21/4	Standwell . . . . . 18/2	Wall-Tonast† . . . . . 27/2
Nylex . . . . . 38/6	Rext† . . . . . 27/12	Steadfast . . . . . 10/4	Waratah— (Plaster) . . . . . 25/1 (Paint) . . . . . 27/7
O-pak-ot . . . . . 27/6	Rheem . . . . . 33/3	Steelbilt (Doors) . . . . . 18/4	Wardex . . . . . 11/4
Oral . . . . . 11/2	Richardson . . . . . 35/2	Steelbilt . . . . . 44/3	Waterloo . . . . . 18/4
Orb . . . . . 12/1	Rickah† . . . . . 27/4	Steelex . . . . . 15/2	Wescot . . . . . 27/8
Ormonoid . . . . . 11/2	Ring-Grip . . . . . 38/5	Steriglass . . . . . 45/4	White . . . . . 42/4
Opext . . . . . 27/2, 27/10, 27/12	R.M.M.P.† . . . . . 27/2	Sterilamp . . . . . 35/5	Whiteo . . . . . 28/6
Pabco . . . . . 11/2	Rogers† . . . . . 27/2	Sterlec . . . . . 39/2	Wire-Crete . . . . . 10/2
P. & B. . . . . 11/2	Rokolor . . . . . 14/1	Stormor . . . . . 44/2	Wonderheat . . . . . 35/8
Palladium† . . . . . 27/2, 27/10	Rokso . . . . . 25/5	Sunlit† . . . . . 27/2	Yu-r-lite . . . . . 10/1
Parkot† . . . . . 27/1	Rollaway . . . . . 42/2	Superlac† . . . . . 27/12	Zenith . . . . . 27/1
Pave† . . . . . 27/12	Roofcote . . . . . 11/4	Supertex . . . . . 24/1	Zeristo . . . . . 22/5
Peerless . . . . . 30/6	Roofrite† . . . . . 27/12	Swanbar . . . . . 9/2	Zincanneal . . . . . 12/1
Perfotile . . . . . 22/6	Royal Sovereign . . . . . 1/4	Swansdown† . . . . . 27/3	
Perfoply . . . . . 22/6	Rubanit . . . . . 10/9	S.W.P.† . . . . . 27/12	
Perfosteel . . . . . 22/5	Rusta-Resta . . . . . 27/6	Tanctect† . . . . . 27/6	
Perfoverts . . . . . 22/6	Samson—	Tampin . . . . . 28/3	
Permelastic . . . . . 10/5, 37A/1	Sash Card . . . . . 28/2	Tanox† . . . . . 27/6	
Permatkote . . . . . 27/1	Strongroom Doors . . . . . 20/3	Temprile . . . . . 21/3	
	Sanymetal . . . . . 44/1		



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